Factors Affecting Performance Proficiency:

A Case Study Involving Intermediate Piano Students

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Abstract

The goal of this study was to determine the effect of a number of factors on the performance proficiency of three intermediate piano students having different learning styles, all of whom shared the same teacher. Four sets of data were collected in this investigation: the methodology of the teacher; the practice behaviour of the participants; the effect of intrinsic factors, such as participant attitude, motivation, and ownership of learning; and the effect of extrinsic factors that included parental influence, and participants' school- and employment-related responsibilities. Performance proficiency and assessment of practice behaviour were measured by three external, professionally-qualified music examiners.

Performance proficiency varied to some extent between participants, but they shared similar practice behaviours. Learning style does not, therefore, affect practice behaviour. Although they planned their practice time, participants did not show much evidence of monitoring the quality of their practice. On the other hand, participants showed positive attitude; they were motivated to learn; and they were observed to plan their practice time, all indicators of, among other things, positive influence of the teacher and parents. Participants showed evidence that these constructive habits were a denominator common to both their schoolwork and piano practice. It was apparent that, except for learning style, all factors examined had an effect on performance proficiency. Performance proficiency is, therefore, influenced by a large web of factors, a finding that is instructive for classroom teachers. Teachers need to avoid the temptation to teach toward performance expectations. Emphasis should be placed instead on teaching and assessing formative learning strategies.

Acknowledgements

There are a number of individuals who provided support that was important to the successful completion of this study. The two piano students I refer to in the first chapter were influential in leading me to further investigate the nature of practice. Their mother was also a support, in that she continually encouraged me as the study progressed.

My thanks go to the teacher identified in this study for so promptly identifying a target population of students in her studio, and for approaching them about being involved as prospective participants. Both teacher and student participants were very cooperative, and provided me with all of the data needed. I thank them for their sincerity. I want to also thank the three examiners for taking time out of their busy schedules to provide appraisals that gave my work a great deal of credibility.

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Finally, I thank my heavenly Father. Over the course of this study, I came to know in a very personal way that "I can do everything through Him who gives me strength" (Barker, Burdick, Wessel, & Youngblood, 1985, Phil. 4:13).

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CHAPTER ONE: INTRODUCTION TO THE PROBLEM

Piano teachers know that their students' performance proficiency depends on effective practice, but teachers often do not know whether students employ productive learning strategies as they practice. Two consequences frequently result. Practice is not as productive as it could be, and becomes more of a routine than a meaningful experience, since students are often unaware of how to plan or monitor their practice. In these instances, students do not reflect significant improvement over the course of weekly lessons. One purpose of this study was to identify practice strategies actually used by intermediate piano students having different learning styles, and to assess the influence of these strategies on performance proficiency, as determined by external examiners. The study also sought to identify relationships between strategies used in piano practice and in other areas of learning. Elements of the affective domain, such as attitude, motivation, and ownership of learning, were investigated to assess their influence on practice. Furthermore, the curriculum and methodology used by the teacher at lessons were investigated in order to ascertain the relationship between teaching and practice. This investigation was considered important because use of productive learning strategies in music performance develops many higher-level cognitive processes, such as creative thinking and problem solving (Webster, 1990, p. 23).

Background of the Problem

The words *perform* and *demonstrate* have taken an important place in the vocabulary of the latest Ontario secondary schools' curriculum documents (1997-2000). The *Grades 9 and 10: Science 1999* document, for example, states that "the expectations identified for each course describe...skills that students are expected to develop and

demonstrate in their class work" (Ontario Ministry of Education, 1999, p. 5). Implied in this statement is the disconcerting assumption that students already have study habits that will enable them to acquire performance skills. "The overall expectations describe in general terms the knowledge and skills that students are expected to demonstrate by the end of each course" (Ontario Ministry of Education, 1999, p. 5). Concern that this assumption might not be valid is well founded, especially in light of the fact that the curriculum areas stress only outcome expectations, not formative study habits. A problem naturally arises if students do not have the study skills necessary to achieve those expectations, a situation that may occur if, for example, students cannot "detect deviations from the intended behaviour and adjust for them" (Palmer & Drake, 1997, p. 369).

Statement of the Problem Context

As a secondary school science teacher, I continually encounter students whose poor work and study habits prevent them from achieving the goals of classroom learning. My awareness of this problem has become more acute, however, in my experience as a private piano instructor. A little over 4 years ago, during the summer of 2001, I received a call from a mother who happened to hear that I was accepting new piano students. She explained that her two daughters, aged 8 and 10, suffered from central auditory processing disorder (CAPD), a condition of which I was unaware. She proceeded to detail her daughters' unsuccessful attempts at learning in a regular classroom setting because of this condition, and her subsequent decision to provide home schooling for them. She emphasized that the girls were under the care of an audiologist, and asked if I

would be willing to take these girls on as students. After some further consideration of the potential challenges this teaching assignment would bring, I consented.

The year 2001-2002 was a memorable one for me because of my experiences as the piano instructor of these girls. During one of the first lessons, the girls' mother had decided to drop them off in order to run some errands. As I was teaching one of the girls, my wife happened to notice that the other one was climbing over furniture and in general creating a scene unbeknownst to me. After that episode, the mother faithfully sat in during her daughters' lessons. The teaching process during that first year was an intense one because the girls lacked the ability to focus on and follow the music as they were playing. Each week I would guide them as they played by running my finger along the page of music, and I would stop them with frequent requests to correct mistakes. A challenge I recall as being particularly formidable that year was that of teaching them to play rhythms correctly. It was especially difficult for them to play rhythms that required that beats be subdivided, and it was common for me to write the beat breakdown in entire pieces of music. I insisted that they count out loud as they played, a practice they soon took on as their own once they realized how much it helped them keep track of their place in the music. Despite their slow progress, I nevertheless had them playing at recitals with my other students and, considering the difficulties with which they had struggled, they performed admirably.

By the end of that first year of instruction, my judgment was that the girls had developed musically to a small degree; I certainly did not think I had done a great job of helping them cope with their condition. Therefore, I was surprised to get a phone call sometime during the summer of 2002 from their mother, who summarized the events of

the girls' latest yearly appointment with their audiologist. The specialist had in his possession the results of the most recent aptitude test. Before sharing the test results with the family he had asked whether the girls were taking music lessons, a question that naturally surprised the mother. Upon answering in the affirmative, the doctor rationalized his hunch: In his experience, the mother explained to me, this audiologist had found that his CAPD patients' test scores consistently and significantly improved after they had a period of formal music instruction. He more specifically pointed to the girls' scores in logic and reasoning as ones that tended to show the most marked improvement in these patients. The mother ended the phone call by thanking me for the service I had done for her daughters over that past year. This conversation left me wondering what factors contributed to the girls' improved academic performance. To what degree was this result influenced by the content of the music they learned, the teaching strategy I employed, or how they practiced between lessons, or…?

Purpose and Objectives of the Study

My experience with the two piano students described above gave me a renewed appreciation for the skills required to perform music proficiently. Such proficiency is important not simply because it enables students to play a musical piece with excellence, but also because students develop learning behaviours and skills necessary to achieve an excellent standard of performance. These considerations are as important in learning to perform music as they are in the study of any other subject. I would argue that, by failing to address how these learning skills should be developed in the classroom, the Ministry has put some students at risk of not being able to meet new challenges, be they ones that

students encounter in specific academic settings, or those of non-classroom, real-world nature.

Piano practice, therefore, requires examination for a number of reasons. Practice is the pivotal element in acquiring performance proficiency (Hewitt, 2001; Sloboda & Davidson, 1996), yet teachers often assume that students will reach this proficiency with minimal, if any, guidance on how to practice effectively. Although this concern may at first glance seem specific to music, it is, in fact, one that arises from a reading of any of the most recent Ontario Ministry of Education curriculum documents (1997-2000). *Think literacy* (2003) is a series of Ministry curriculum documents intended to give teachers across the curriculum a template to follow to help students improve their reading, writing, and communicating skills. In theory, this kind of support should enable teachers to assist students in achieving performance expectations in basic learning skills. The principles of this template are not, however, intuitively embedded in curriculum profiles. While these profiles clearly define performance expectations, no teaching or learning strategies accompany them. Neither is there is reference to curriculum support documents such as *Think literacy*, because it was written after the course profiles were published.

Piano practice requires investigation also because some teachers are too often unaware of its potential as a problem-solving process. The nature of practice is such that students get immediate feedback on their playing. If students are aware of the goal of their practice, and if they actively listen to themselves as they practice, they will have a sense of how closely their practice aligns with proficient performance. More importantly, as a result of the feedback they hear, students should be able to diagnose the causes of the problems that prevent them from reaching the benchmark standard. Students should then

be able to use, or generate, strategies that will help them to bridge the gap between performance deficiency and proficiency, and students should be able to reflect on how well those strategies aided them in solving problems.

In reality, because some teachers are more concerned about the standard of performance than about the means by which students reach it, these teachers assume that students already know how to correct for performance deficiencies. Some teachers, therefore, assume that students know how to listen, and what to listen for, as they practice. Moreover, some teachers assume that students know that performing music is about more than just mechanics. These teachers assume that students understand how to play a melody expressively. Yet this skill, an important one in performing a piece well, requires sensitivity and creative expression, which students need guidance in learning. Without this assistance, students may never reach a proficient level of musical performance.

As a music instructor, I was forced to address these assumptions in my first year of teaching the girls described above. The time-consuming process of actually teaching them the means of achieving proficient performance yielded a harvest of positive results, mainly because the girls showed evidence of using these means in practice at home. One of the fruits of this investment of time was that the girls came to take greater ownership of their learning techniques in personally meaningful ways. For example, they developed creative ways of solving the challenges presented in each piece of music.

The experiences described above were the most poignant of many others like it. In fact, it has struck me as more than coincidental that students in my science classes who have had private music instruction showed, on the whole, more purpose-driven study

habits. The questions that developed in my mind as a result of these teaching experiences formed the framework for this study. These research questions were:

- What practice habits do students typically employ at home as they prepare for weekly piano lessons?
- In what kind of study environment do these students practice?
- What influence do parents and other extrinsic factors – both positive and negative in nature – have on practice?
- Do intermediate piano students show evidence of creative thinking as they practice?

One research hypothesis is that students will demonstrate two kinds of learning behaviour during productive practice. Students will use learning approaches that are specific to the demands presented by the music they are learning. Students will also use support strategies that help to "maintain a suitable state of mind" (Dansereau, 1985, p. 209) – precisely the strategies outlined in *Think literacy*. Another hypothesis is that productive practice will occur in cases where the locus of control of practice is closer to students.

The goal of this investigation was to identify factors that affected proficient music performance. This was accomplished by selecting three intermediate piano students of different learning styles, and to identify practice strategies they used as they worked on assigned pieces of music. Once participants had practiced this music for 3 weeks, external examiners were asked to view videotaped practice of these participants, to assess their practice strategies, and to assess their performance proficiency. The study investigated participants' attitude, motivation, and ownership of learning, in order to

determine their influence on practice. The teacher's curriculum and methodology were investigated to determine the relationship between teaching and practice. Finally, the study sought to identify relationships between learning behaviour participants used in piano practice and in other areas of learning.

The issues raised in this study were considered important to learning in general. Music is a multi-modal activity because it engages many types of intelligence; it integrates the auditory, visual, and kinesthetic senses; and it helps to promote pattern recognition, memory and selective listening skills (Snyder, 1997). Teaching students to solve problems, and to think creatively, should be high priorities for music teachers, because [they] help students to "experience music personally" (Hickey & Webster, 2001, p. 21). These thinking strategies are valuable in any subject area because every discipline requires them in order for students to master learning expectations. Hickey and Webster (2001) claim that "by creating their own music or musical interpretation, students can sense the power and meaning in music that are beyond the notes themselves" (p. 22). If these results are possible in music, every possibility exists for similar findings in other subject areas. Teaching toward use of effective learning behaviour is, thus, surely a goal of educators everywhere.

Scope and Limitations of the Study

This investigation involved learning strategies used in piano practice. Because piano instruction is one-on-one between teacher and student, this study was not used to address situations involving in-school, in-class experiences. The target population involved intermediate-level musicians for two reasons. At this level, "effects of musical training on cognitive capacities can be quantified" (Palmer & Drake, 1997, p. 381), so the

study of formative creative thinking in these students was deemed a fertile one. On a more practical level, even though learning strategies might have been more carefully studied in older, more advanced students, the concern was that the population of advanced students available for study would be low. A limitation of this approach is that intermediate-level piano students are often pre-teen or early adolescent in age and it may not be justifiable to assume that students this age have the ability to evaluate their own performances and practice habits.

Definition of Terms

Because the context for this study was music, certain terms specific to the musical domain are used in this study. To avoid the possibility of misleading or confusing readers unfamiliar with music-related jargon, operational definitions for these terms are as follows:

- **Practice** is the act by which "musicians break tasks down into component processes" (Nielsen, 1999, p. 275), and represents a process that guides them as they learn to play music. Practice is diverse in nature because it is unique to each musician's method of learning.
- **Royal Conservatory of Music (RCM)** "provides a definitive standard in music education through its curriculum, examinations, and extensive network of teachers" (Royal Conservatory of Music, 2001, back cover). The examinations are offered in grades 1 to 10 based on a curriculum of 10 graded levels of learning, and students who pass these examinations can use these results to earn high school credits. The highest level of learning in this curriculum is the ARCT – Associateship of the Royal Conservatory of Music in Toronto – for which the

RCM offers diplomas in teaching and performance. Certificates of learning are offered for all 10 levels of learning, and are awarded to students who have passed exams in performance and, where required, theory. Examiners are members of the RCM College of Examiners, the members of which "demonstrate success in the teaching profession ... strong organizational and time management skills, and exceptional interpersonal skills to create a positive atmosphere during examinations" (RCM Examinations, n.d.).

- **Intermediate piano students** were identified based on their ability level, as reflected by the RCM grade level at which they were learning. These students were learning within the RCM grades 4 through 7 levels.
- **Proficient performance** of a piece of music was deemed as such by experienced musicians. This level of competence enabled the performer to clearly and accurately communicate the intent of the composer.
- **Learning style** is a person's preferred way of working with information (Fleming & Bonwell, 2005). The VARK questionnaire (2005) identifies the following as possible learning styles: visual, auditory, logical/rational, and kinesthetic. Combinations of styles are possible, resulting in multi-modal styles of learning.

Outline of the Remainder of the Document

Chapter Two will review research on factors affecting music performance, including questions that formed the context for this study. The literature review will address the influence of practice on performance. The role of music in developing higher-order thinking skills, such as creative thinking and problem solving, will be discussed, followed by an analysis of the ways in which these thinking skills are commonly taught

and assessed. Research will be summarized on the extent to which music performance can be transferred to other fields; productive practice of music; and the influence of social and affective domains on music performance. The forms of thinking developed in music performance that can be transferred from music to other learning areas will be reviewed. Relevant gaps in research will be identified as a means of identifying questions that this study addressed.

Chapter Three will explain the methodology and procedures that were designed in order to collect the five sets of data: observations of and interviews with participants, examiner appraisals, teacher questionnaire, and identification of participants' learning styles. A rationale for the collection of each set of data will be explained, as well as why a case study was chosen as the method of research. The chapter will close with a discussion of the study's methodological assumptions and limitations of the study.

Chapter Four will present a detailed account of the findings of each of the five sets of data. Interesting or anomalous data will be highlighted, and themes or patterns evident in the data will be identified, explained, and summarized.

Chapter Five will explain conclusions and implications of the study's findings. The findings will be used to address questions raised in the literature review that formed the basis for the study. The conclusions will then be used to explain implications for instruction in music specifically and learning generally.

CHAPTER TWO: REVIEW OF RELATED LITERATURE

This chapter will summarize research on factors that have an effect on practice of music, including motivation and creativity. Questions raised or suggested by this research will be identified and discussed so that context may be established to focus on the major purposes of this study.

The Literature Review

The topic of music practice has garnered increasing attention in recent years. Reasons for attention to this topic are naturally specific to music, but they are also of interest in issues related to learning more generally. Practice is one of the main conditions required for development in music, as well as in other domains. Ericsson, Krampe, and Tesch-Romer (1993) found that "deliberate practice...is judged to be most relevant for improvement of music performance" (p. 389). To be done properly, practice "requires monitoring, planning, and awareness of musical structures" (Palmer & Drake, 1997, p. 369), all of which are high-level cognitive functions useful in any learning experience. Moreover, giving children time to practice between lessons develops skill in independent learning (Pitts, Davidson, & McPherson, 2000, p. 45).

The myth exists that capable musicians have achieved their competence due to inborn talent. O'Neill, as cited in Sloboda (2000), addressed the validity of this claim by performing a study of 7-9-year-old children about to start music learning. She measured the students' musical and intellectual aptitude, as well as a "general motivational variable…and amount of practice undertaken during a music performance assignment" (Sloboda, 2000, p. 400). Her finding was that the quality of the children's performances

was "predicted solely by the general motivational variable and the amount of practice undertaken. Intelligence and musical aptitude had no influence on outcomes" (p. 400).

The research devoted to effective practice of music has arisen to a large degree from a growing awareness that it may be responsible for developing higher-order thinking skills, such as creative thinking. Smith (2001) identified five conditions by which to judge a cognitive process as critical thinking. The five criteria are identity (i.e., "Is it really thinking?"), practical relevance, scope, power (i.e., "Is it effective?"), and operationality (i.e., "Can it be taught?") (p. 357). Creative thinking "is concerned with the invention or discovery of alternatives. It draws on our capacity to imagine possibilities" (Smith, p. 358). In other words, creative thinking develops students' creativity, which in music involves composing, improvising, and arranging (Byrne, MacDonald, & Carlton, 2003, p. 277). While this form of thinking has wide-ranging practical relevance and scope, it often lacks power and operationality, because of "deficiency of content" (Smith, p. 358). Smith argues that "few [instructors] are grounded in a deep, widely-accepted understanding of the phenomenon, [so that] the teaching of creativity lacks depth" (p. 358). Consequently, the application of creative thinking in the classroom does not consistently improve mental performance (p. 358).

Byrne et al. (2003) draw a similar picture of the approaches used to teach musical creativity, claiming that weaknesses of power and operationality in the teaching of creative thinking are rooted in flawed assessment practices. These practices may be faulty in two ways: "by allowing what is relatively easy to assess to drive the content, and by including creative music-making activities within the examination syllabus in order to ensure that teachers perceive them as being both valuable and serious" (Byrne, et al.,

2003, p. 279). The authors further claim that teachers frequently view only the products of creative thinking as worthy of assessment, "thereby missing the original point of including inventing in the curriculum" (p. 279).

The concept of flow, or optimal experience, has been linked to creative thinking (Csikszentmihalyi, 1988). Flow "may be described as the effortless involvement with everyday life and may occur when a person is engaged in absorbing and enjoyable activities" (Byrne et al., 2003, p. 279), and it occurs whenever there is a "balance between the challenges perceived in a given situation and the skills a person brings to it" (Csikszentmihalyi, p. 30). Current research suggests that "the creative output of musicians can be positively correlated with levels of flow" (Byrne et al., p. 280).

Amabile (1996) has created a "reliable method for creativity assessment which is grounded in a consensual definition of creativity in which each rater is an appropriate observer" (Byrne et al., p. 280). According to the definitions of this tool, called the Consensual Assessment Technique,

> a product or response is creative to the extent that appropriate observers independently agree it is creative. Appropriate observers are those familiar with the domain in which the product was created or the response articulated. Thus, creativity can be regarded as the quality of products or responses judged to be creative by appropriate observers, and it can also be regarded as the process by which something so judged is produced. (Amabile, 1996, p. 33)

Byrne et al. (2003) cite the three conditions Amabile (1996) sets, which the assessed task must meet in order for it to qualify as creative. It should bring into being

"an identifiable product or clearly observable response that can be made available to appropriate judges to assess" (Byrne et al., p. 281). The task should also "be open-ended enough to allow for a variety of individual responses in terms of flexibility and novelty. Third,...there should not be large individual differences in baseline performance on the task" (p. 281). Judges are appropriate if they have "sufficient experience, ability and expertise in the domain to be able to evaluate the work in question and to have developed their own implicit criteria for creativity, and for...aesthetic appeal, technical merit or form and structure" (p. 281).

Smith (2001) proposed that performance represents the result of problem-solving study, and that this type of study should involve a number of specialized tasks. The nature of thinking that takes place during piano practice will affect which tasks are applied, but the following tasks would certainly be relevant: problem identification; problem definition; problem analysis; diagnosis; alternative generation; and evaluation (Smith, p. 366-7).

Problem identification is "becoming aware of the existence of a problem...that bears improvement," while problem definition involves developing a "mental representation of the situation in order to think about it" (Smith, 2001, p. 366). Analysis constitutes determining "what kind of situation one is dealing with so appropriate problem solving activities can be performed," while diagnosis is the determination of the problem's cause(s), "typically the key challenge in solving performance problems" (p. 367). In alternative generation, "many kinds of alternatives – problem definitions, diagnoses, problem solving strategies – must be generated during the problem solving process" (p. 367). Generating these "candidate solutions" is commonly done in artistic

professions, and requires creative thinking (p. 367). Finally, evaluation is "the assessment of alternatives according to relevant criteria," and although it is influenced by human judgment, "certain concepts and techniques offer teachable means of improving its performance" (p. 367).

Research on music practice has tended to focus on "relationships between learning activities and learning results," where "little consideration [has been given] to what [students] learn as they practice" (Nielsen, 1999, p. 275). This significant oversight represents a failure to recognize "learning through methodical practising as cognitive problem solving" (p. 275), thereby missing the possibility that "learning strategies in instrumental practice are related to learning strategies in other learning areas than the musical one" (p. 285-6).

Nielsen (1999) addressed this discrepancy in his case study of two advanced organ students' preparation of complex music for performance. He collected participant data in a three-step sequence: first, by observing practice behaviour; then, by recording concurrent verbal reports during practice (in answers to the questions 'What am I thinking?' and 'What am I focusing on?'); and lastly, by recording retrospective debriefing reports after practice (p. 278). He suggested that two types of learning strategies are used during music practice: primary and secondary support strategies. Primary strategies deal directly with the material being studied, and include "strategies to select relevant problem areas…strategies to organize and to form relations in the learning material…and strategies to relate the learning material to existing knowledge" (p. 287-8). Support strategies are study habits or techniques that assist the learner, and include

"strategies to direct attention to the task at hand...strategies to master achievement anxiety...and strategies to secure efficient use of time" (p. 288).

Many studies have identified practice as critical to acquisition of music performance skill (Hewitt, 2001; Sloboda & Davidson, 1996), but ability to perform musically is a skill that transfers to other fields in which performance is required. "Across several different types of domains, elite performers are found to engage in similarly high levels of...deliberate practice" (Ericsson et al., 1993, p. 392).

But what exactly is productive practice of music? There are several varying definitions of this concept. Ericsson, as cited in Hewitt (2001), claimed that practice is productive when it "requires a well-defined task with an appropriate difficulty level for the musician, informative feedback, and opportunities for repetition and correction of errors" (p. 307). Jorgensen, as cited in Hewitt (2001), described a more general view of music learning, arguing that learning of music is a self-teaching process that involves three phases: "planning, the conduct of practice, and the evaluation of both the process and product of practice" (p. 308). On a still more macroscopic level, Hallam (1997) defined practice as "that which achieves the desired end-product, in as short a time as possible, without interfering negatively with the long-term goals" (p. 181).

The issue of practice has received increasing attention because evidence shows that it is often not done effectively. Moore, Burland, and Davidson (2003) cited research that indicates that practice can be both lonely and boring (p. 529). The consequence of this experience is that students often limit their practice to repeating the music, and, as Hallam (2001) found in her study of novice instrumentalists, they practice by simply "starting at the beginning and playing through to the end several times. The aim of

practice appeared to be [merely] to play the music correctly" (p. 9). She found it questionable that participants were even practicing. "The majority of children will play pieces through without any attempt at self-correction, rather than identifying difficult sections and working on those" (Pitts et al., 2000, p. 53). In fact, as a result of their case study of three instrumentalists, Pitts et al. judged that "the children we observed did not seem to have a real idea of why they were playing through their repertoire, although all had good recollection of what they had been asked to do" (p. 53). Sadly, practicing all too often "becomes a condition upon which [children] are permitted to keep their instrument, remain in the band, call themselves a musician; it is not expected to be pleasurable, and as a result it seems it rarely is" (Pitts et al., p. 53). It should also be noted that the case study by Pitts et al. involved brass and woodwind musicians, not piano students, and that the study examined only "primary school instrumentalists ...at regular intervals during the children's first six months of learning" (p. 47). While practice technique may have been a legitimate issue for examination in this study, there is a question of the extent to which the practice of novice brass and woodwind players relates to that of piano students who have achieved the intermediate-level ability.

Interestingly, even when practice is done well, practice techniques "cited as being 'most effective' were not the ideas 'used most'" (da Costa, 1999, p. 75). Moreover, students do not appear to demonstrate accurate recollection of time practiced. Madsen (2004) found that after a 30-year period, "students are not accurate in assessing past amounts of applied music practice when comparing records of actual practice time to later perceptions of this practice time" (Madsen, p. 77). Moreover, he found only a weak relationship "between practice time and [students'] highest level of performance,

although most participants indicate that they believe that there is" a strong relationship (p. 77). Madsen's findings lend support to the practice of journaling the content and amount of practice.

Attitude and motivation are clearly factors tied to students' musical development. Da Costa (1999) cited research claiming that "pupils are motivated to practice because they have learned to associate certain behaviours with achievement outcomes…[and] pupils need to learn behaviours that will give them the important skills necessary to make continual progress" (p. 66). These behavioural outcomes, she argued, are possible only through a student-centred approach to learning. Again citing research, da Costa finds that with this type of learning, "pupils made more progress, took more responsibility for their own learning in the lessons and in their practice" (p. 67). In her own study, da Costa investigated instrumental music students' attitudes to varied, structured practice, based on whether or not they had the opportunity to choose their method of practice. She found, by way of analysis of follow-up interviews and questionnaire responses, that participants who were given the opportunity to choose their method of practice "were able to play more fluently, learned their music faster, had improved their technique and were able to play more of the music from memory" (p. 72). Whether these improvements proved to be long-term is debatable; only half of the participants "reported that they could now choose how they wanted to practice" (p. 74). What is abundantly clear from the study is that a structured approach to learning helped students learn music faster, which in turn nurtured positive attitude.

In recognition of the reality that practice occurs within the fabric of the rest of life, Moore et al. (2003) investigated social contexts that influence practice. In their

analysis of structured interviews, held with 257 keyboard, string, brass, and woodwind students of ages 9 to 19 years, the authors found that "parental support is necessary during the initial learning period" (p. 543). In the same study, it was found that the teacher also played a role in the development of students' musical success: "The critically important characteristics of the first teacher are playfulness and friendliness" (p. 544); i.e., someone the students like. The authors qualify their conclusion with the assertion that "a more detailed account of the role that teachers play in development is required" (p. 544) Moore et al. took sustained practice as an indication of motivation to learn, and found that more successful child musicians "engaged in more initial and sustained practice than the other children" (p. 545). The above conclusions show that social interaction has a definite role in the development of students' musical ability, but more research is needed to show the effect that these social factors have on students' skill development.

A factor that has significant impact on the schedule of many middle and high school students is involvement in extracurricular school activities. Nonetheless, Ericsson et al. (1993) found that in spite of being "quite constrained by school activities... elite performers spent more than 15 hr on weekly practice" (p. 391). No research appears to exist to indicate the effect of extracurricular activities – musical or otherwise – on the music practice of intermediate-level piano students. As these individuals enter adolescence, part-time employment may add to the commitments of involvement in extracurricular activities. If piano students are employed or if they are involved in extra-curricular activities at school, how do these commitments affect their music practice?

Studies show that locus of control also affects quality of practice (Pitts et al., 2000). Novice players often practice poorly because of extrinsic motivators, such as parental or teacher pressure. "Treating practice as something that is 'good for you'...is an attitude unwittingly perpetuated by teachers and parents, and one which fails to connect with children's intrinsic motivation, or to provide them with goals that are attainable and finite" (p. 53). Productive practice is important in the development of piano students' musical ability, and it occurs within a context somewhat different from that of the novice instrumentalists examined in the study by Pitts et al. Whereas brass and woodwind players commonly learn in a classroom setting, in groups – ensemble settings – and meet several times each week, piano students attend lessons only once per week, on an individual basis, and practice is done in a solitary setting, usually at home. Advanced pianists practice independent of critical social context, and for longer periods of time. Both of these factors indicate that intrinsic motivation to practice is critical, and that advanced pianists are more likely to see themselves, not others, as the agents responsible for performance proficiency. Where is the locus of control of practice in intermediate piano students? Is this locus of control reflected in the interaction of parents with these students? If so, how?

Studies on cognitive theory of practice of music have been largely limited to those higher-order thinking skills used only in music. This trend is surprising, given that parents often choose to enroll their children in music lessons to help them to develop better study skills in other school-related subjects. This may suggest that form of complex thinking that are developed intensively in music practice are transferable to other settings of learning. What are these forms of thinking? Palmer and Drake (1997) identified

monitoring, planning, and awareness of music structures as hallmarks of skilled music performance.

Monitoring is done "to create instructions for repair when deviations between productions and intentions are found. When trouble is detected, corrective action is taken, based on information to which the producer has access" (Palmer & Drake, 1997, p. 369). The ability to plan is the ability to build concepts of what the outcome should be (Palmer & Drake, p. 370), and it can account for fluency, the ability to perform in a smooth and consistent manner, and flexibility, the ability to generate different actions that are functionally equivalent at some level (MacKay, 1982, p. 502). Experience and practice often lead to more future-oriented (anticipatory) than past-oriented (perseveratory) [performance] errors (Dell, Berger, & Svec, 1997; Stemberger, 1989). Studies of errors also show that planning enables learners to practice parts of music that access a greater number of elements encompassing larger sections of music (Garcia-Albea, del Viso, & Igoa, 1989; Gruson, 1988; Palmer & van de Sande, 1995). Better practice should, therefore, reflect "plans that incorporate more future-oriented events as well as events from larger ranges surrounding the event currently being produced, than less skilled performance" (Palmer & Drake, 1997, p. 370).

The ability to anticipate errors, and to practice larger chunks of music, are evidence of expert problem solving. Chi, Feltovich, and Glaser (1981) identified expert problem solvers as being able to activate and confirm "an appropriate principle-oriented knowledge structure, a schema, the activation of which can occur as a data-driven response to some fragmentary cue in the problem" (p. 149). Gruson (1988), in her study of rehearsal strategies of musicians at different levels, drew conclusions that reflect this

problem-solving ability. As musical ability developed, the students "repeated sections of music more frequently, ...there was a tendency to reduce the number of notes repeated, and the size of the unit of repetition increased with music level" (Gruson, p. 107). Evidence indicated that it was the practice required to master a new level of performance, rather than merely to learn a new piece, that results in lasting changes in cognitive processing (Gruson, p. 107). What evidence is there of these problem-solving strategies in the practice techniques of intermediate-level piano students?

The third hallmark of skilled performance identified by Palmer and Drake (1997) is "heightened sensitivity to structural relationships among sequence elements" (p. 370). Elements of music include metre (beat structure) and melody (tune). Playing that reflects sensitivity to metre, for example, would "emphasize strong metrical beats by lengthened durations and delayed onsets" (Palmer & Drake, p. 370). With better practice, students should show evidence of sensitivity to elements of music. Is this the case in the practice techniques used by intermediate-level piano students?

Hallam (1998) argued that "practice will only become purposeful and self-determined when the pupil has a range of 'task oriented strategies' to draw upon" (p. 140). At the intermediate level, it would appear likely that piano students have internalized some fundamental practice strategies. A question for further research is centred on what those strategies are, particularly those of developing piano students. Furthermore, what study habits do these students employ in piano practice that they also use in their schoolwork? This second question is important insofar as the topic of transfer of learning is concerned. It would be helpful to music teachers, for example, to know

what practice strategies are likely to promote effective learning in both piano performance and schoolwork.

If practice is important to success for the musician, it is not the only ingredient, as has already been noted in research on social factors. Burland and Davidson (2002) have identified the importance of three factors as critical to enabling talented musicians to make the transition from training to professional life. These factors are the importance of music to self-concept, positive experiences (with others both in and outside of the musical establishment), and the development of coping strategies (p. 134). Clearly then, music students' attitudes about themselves and their abilities and the quality of their social interactions with significant others are important. To what extent is this three-part model of success reflected in the practice of intermediate piano students?

Summary of the Literature Review

Four themes arise from the literature review on the nature of music practice. Practice is one of the primary conditions required for sustained musical development. In terms of the practice itself, monitoring, planning, and awareness of musical structure are cognitive factors that are at work during productive, deliberate practice (Palmer & Drake, 1997, p. 369). Next, there are factors in the social context of music students' lives that have a role in the development of their musical ability. And finally, research shows evidence that practice is often done improperly, or without purpose, particularly among novice musicians.

Intermediate-level piano students are commonly pre-teens or early teenagers, at a period of life when they must deal with many new challenges. At the same time, these musicians have developed to the point where they possess skills and practice strategies to

enable further musical growth. Research has identified shortcomings in the practice strategies of novice musicians, as well as attributes of the practices of expert pianists. Furthermore, research shows that teacher and parental influences are important in musicians' early development. There appear to be deficiencies in the research, however, on the topic of what practice strategies intermediate piano students use. What might these practice strategies be? Furthermore, what factors affect the practice strategies of intermediate-level piano students, factors that may be critical in determining whether these individuals continue to develop musically? Similarly, while there is evidence that social interaction has a role in general musical development, no research appears to specifically address the effect of social factors on intermediate-level piano students' musical development.

Finally, if problem solving occurs during acquisition of music-related skill, research does not appear to explain the extent to which this occurs in the practice of intermediate music students. Moreover, since problem solving is a transferable skill, it would be helpful to learn whether and to what extent these musicians transfer study habits, such as problem solving, from their piano practice to their schoolwork.

The literature review of this chapter serves as the context upon which the next chapter is built. Chapter Three will describe the methodology that was followed in researching the practice of three intermediate piano students. The process of participant selection will be described, as well as the means by which data were collected, recorded, and analyzed. The chapter will close with an outline of assumptions and limitations of this study.

CHAPTER THREE: METHODOLOGY AND PROCEDURES

This chapter outlines the steps that were followed in investigating the practice done by three intermediate piano students. The research methodology and participant selection process are explained. The means by which data are collected, recorded, and analyzed are accounted for, followed by a discussion of the methodological assumptions and limitations.

Description of the Research Methodology

A number of factors were investigated to determine how they affected intermediate piano students' proficiency in music performance. For studies such as this one, in which "how" and "why" questions are addressed, and in which the investigator has "less control…over events, and/or if the variables are so embedded in the situation as to be impossible to identify ahead of time," (Merriam, 1998, p. 32) case study is the best choice of research design. This design was also selected "to gain an in-depth understanding of the situation and meaning for those involved" (p. 19). In a case study, intensive data and analyses can be collected from single individuals in this study as a way of discovering factors that affect piano performance. Each participant thus represents a case, an "integrated system", a "unit around which there are boundaries" (p. 19). A case study design was chosen because the goal of this research was to discover and interpret events and contexts relevant to the practice of participants that affected their performance. Merriam cites Cronbach's phrase "interpretation in context" to emphasize that the goal of this study was to focus on "holistic description and explanation" (p. 29). Based on research findings, particular contextual factors were deemed salient for study to determine their effect on participants' performance proficiency. In this case study, the

factors were participant learning style, practice behaviour, examiner appraisal of proficiency and practice strategy, teacher methodology, and affective characteristics, including participant attitude, motivation, and ownership of learning. Furthermore, assessment of learning behaviour in both piano practice and school study habits was undertaken to determine any relationship between methods of learning in these two areas.

Teacher selection was carried out with the aim of ensuring that the teaching met reputable standards. The design of this study was constructed with the intent to control for the influence of teaching by allowing for just one teacher participant.

Each of the participants, with the guidance of this teacher, chose a piece of music to learn in this study. One of the participants, a 13-year-old female code named Mary, learned "To a wild rose" from *Woodland Sketches* (opus 51) by Edward MacDowell. Another participant, code named John and 13 years of age, studied *Ceremony for peace* by Faber and Faber, while the third participant, a 12-year-old code named Susan, learned *Take five* by Paul Desmond, and arranged for piano by Faber and Faber. Information about participants' behaviour during practice was gathered by way of observations, participant reports, and post practice interviews. Their teacher was asked to complete a written questionnaire to assess teaching resources and methodologies used. Three external examiners, who were all members of the RCM College of Examiners, wrote appraisals of practice behaviour. These appraisals also served as indicators of how well participants were progressing towards proficient performance of their pieces. More than one examiner was chosen in order to fit the terms of Amabile's Consensual Assessment Technique (1996), which assesses creativity as an element of performance proficiency.

Selection of Participants

The three participants selected for this study reflected different learning styles, as determined by VARK, version 5.1 (Fleming & Bonwell, 2005). Scoring of participants' responses to the VARK questionnaire indicated that Mary is a strongly aural learner. John is a multi-modal learner, showing tendencies toward visual and kinesthetic learning styles. Susan's answers showed that she is a mildly kinesthetic learner. All participants were under the instruction of the same teacher, not including the investigator, and were of intermediate ability, studying at the Royal Conservatory of Music grades 4 through 7 levels.

Teachers were considered eligible for this study if they had received an ARCT teacher's diploma and if they were members of a professional organization of music teachers. The search for such a teacher was partly successful. The teacher chosen possessed an Associateship in Piano Teaching from the RCM, though she was not a member of the Ontario Registered Music Teachers' Association, an organization that requires its members to have "proof of teaching experience and students' conservatory examination results (minimum honours [70%] standing)" (Ontario Registered Music Teachers' Association – Ottawa Branch, 2002). The teacher selected came with 20 years of piano teaching experience, and although she was not a member of an organization of music teachers, she has taught at least 30 students weekly over the course of every one of those 20 years. At the time of this study, her weekly teaching schedule involved 50 students.

The participants were selected from a population of piano students who were taking private, formal instruction, and who were under the tutelage of one teacher.

Participants in the sample were chosen who were studying from curriculum of the Royal Conservatory of Music. This curriculum was chosen because it is the most widely used program among private music instructors in Ontario, and because it meets the accreditation requirements of the Ontario Ministry of Education (RCM Examinations, 2003, p. 1). Its popularity is due to the long-standing recognition it has received as a planned, challenging, yet well-supported curriculum that is accessible and easily used by teachers. According to this curriculum, students are at the intermediate level if they are studying music at the grades 3 through 8 Conservatory, with grades 3 and 4 representing the early intermediate grade level, and grades 7 and 8 representing late intermediate level (Royal Conservatory of Music, 2004, Study guide). Mary's piece, "To a wild rose", is of grade 7 level difficulty (Royal Conservatory of Music, 2001, p. 53). John and Susan studied pieces from a graded book series, and the difficulty levels of their pieces were identified based on the level from which they were drawn. *Ceremony for peace*, studied by John, is ranked a grade 5 level piece, while Susan's piece, the arrangement of *Take five*, is a grade 4 level piece.

Data Collection, Recording, and Analysis

All data were collected, recorded, and analyzed by the researcher. Observations of participant learning during practice were collected by videotape and analyzed as described by Nielsen (1999). According to this procedure, information on each participant's practice was gathered in a three-step sequence that was performed once at the beginning of the participants' learning of their music, and once 3 weeks later. In the first step of this sequence, observation was made of practice behaviour (*OBehav*), defined as "the student's performance during practice" (Nielsen, p. 278). The next day, each

participant practiced the same music as was rehearsed the previous day, and was "instructed to focus on cognitive processes involved in problem solving during practice and continuously to give verbal reports of them (*VRDuring*), as if answering the…questions 'What am I thinking?' and 'What am I focusing on?'" (p. 278).

The third step in the sequence was performed immediately after the second. This step consisted of "the student's retrospective debriefing reports of the problem-solving activities after practice (*RRAfter*)" (Nielsen, 1999, p. 278). During this step, each participant viewed the tape of *VRDuring*, and offered clarifications of any verbal reports, where the researcher requested them. The purposes of this step were "to expose further the student's knowledge strategies" (p. 278), and to allow the author to clarify understanding of each participant's reports. This part of the sequence was also videotaped, "making it possible to co-ordinate the student's verbalizations from *VRDuring* and *RRAfter*" (p. 278). The above-described sequence was organized as shown in Table 1.

Collected data allowed for three areas of analysis. One area involved observational sequences of practice behaviour. Observations of participants' behaviour were classified according to the scheme (see Table 2), devised by Nielsen (1999, p. 279). These categories were considered valid indicators of the quality of practice, because they required the participant to monitor, plan, and show awareness of the music's structures (Palmer & Drake, 1997).

Observational sequences of practice behaviour were analyzed in three ways. The verbalization sequences during and following practice (*VRDuring* and *RRAfter*) were transcribed from videotape. Participants' reports were classified as "problem recognition,

evaluation of performance, and choice of strategies" (Nielsen, 1999, p. 280). *The Ethnograph, v. 5.08* (Qualis Research Associates, 2001) was used to develop and sort codes to describe each element of practice behaviour that the participant described in the reports. The researcher's observations of practice behaviour were classified and coded in a manner similar to that used to explain the verbalization sequences. These categories were considered valid indicators of the quality of practice, because they required the participant to monitor, plan, and show awareness of the music's structures (Palmer & Drake, 1997).

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The three examiners' written appraisals represented the third way in which observations of practice behaviour were analyzed. These appraisals were based on viewings of the last videotaped practice of the sequence, held on week 3, day 2. Examiners were informed in advance of the viewing that participants were into their third week of practice of assigned pieces. This information was the basis for the request that examiners focus their feedback on the proficiency of participants' performance of the music. Where examiners deemed a participant's performance to be lacking in

Table 1

The organization of the three sequences with each phase in which information was gathered (Nielsen, 1999, p. 278)

Day #	Description of step in sequence	Length of time required
1	Observation of practice behaviour (*OBehav*)	About 10 minutes
2	Concurrent verbal reports during practicing (*VRDuring*)	About 10 minutes
2	Pause	About 2 minutes
2	Retrospective debriefing reports after practice (*RRAfter*)	About 10 minutes

Table 2

Detailed observational scheme (Nielsen, 1999, p. 279)

Category	Sub-categories	Definition
Segmentation	*Shorter-than-measure*	Plays a segment of a length that is shorter than that of a measure
	One-measure-long	Plays a segment of a length of a measure
	Longer-than-measure	Plays a segment of a length that is longer than that of a measure, but shorter than that of the piece
Tempo	*Tempo I*	*Tempo* is slower than the final concert tempo, but faster than 75% of the final tempo
	Tempo II	*Tempo* is maximum 75% of the final tempo, but faster than 50% of the final concert tempo
	Tempo III	*Tempo* is maximum 50% of the final concert tempo or slower
Uni-bilateral play	*Unilateral*	Plays each hand alone (hands separately)
	Bilateral	Plays hands together
Change of rhythmical structure	–	The rhythmical pattern of a segment is altered by changing the whole structure in certain ways (e.g. length of accents changed compared to the written score)

proficiency, they were asked to explain practice strategies that would help the participant achieve a skilled level of performance. Examiner observations were combined and sorted by code as described earlier.

The teacher methodology questionnaire form represented another source of analysis. The researcher designed the survey questions for two main reasons: to develop an understanding of the teacher's curricular plan, and the extent to which this plan was customarily worked out with student input; and, to ascertain how the teacher applied these curricular goals to learning. Responses were coded, again using *The Ethnograph, v. 5.08* (Qualis Research Associates, 2001), according to the question answered.

The teacher questionnaire responses were deemed important in order to clarify the link between teaching and learning. More specifically, what practice strategies were the teacher routinely instructing students to use, and how well were these strategies being applied by the participants in practice at home?

At the end of the first day of observations made of each participant during the first sequence, the researcher gave the participant a copy of the post-practice interview questions (appendix A). The researcher gave the participants a copy of these questions with the request that participants review the questions with parents, so that participants would understand the intent of the questions, and so that parents could help participants develop clear answers to the questions. As the interview was being conducted, the researcher verbalized the participants' answers to allow them to verify (or clarify, or correct, if necessary) the researcher's perception of the answers. The researcher followed up this verbalization sequence by transcribing answers on to a computer keyboard. Answers to these questions were then sorted according to the coding scheme described

above. In general terms, the categories that were used to code information were participants' practice environment; their sense of ownership of, attitude toward, and focus on learning; range of practice strategies they used in school and during piano practice; and extent to which participants were involved in extra-curricular activity. This information was considered significant in order to come to know the participants' study habits and interests, both within and outside the realm of music. The answers to these questions were considered important also because they could be used to assess other potentially significant factors: participants' attitude, motivation, and extrinsic factors, such as parental support.

Both observations of and reports on practice were intended to account for choices of, and changes in, strategies used, as well as the effects of these strategies on performance over time. In fact, the purpose of analysis of practice sessions was to assess the effectiveness of participants' preparation for performance (Nielsen, 1999, p. 280). Even though the participants' pieces were stylistically different, they were assumed to be representative of music that would challenge participants to develop skill and problem-solving ability. Furthermore, all three participants were of approximately the same (intermediate) ability level, so regardless of each piece's style, all participants would have to address similar technical and interpretive challenges. All of these variables relate to the central issue of learning strategies and, taken together, they "contribute to useful comparisons of the students' methods of working" (p. 280).

Methodological Assumptions and Limitations

The intent of this study was to determine the nature of practice of intermediate piano students. Although the amount of data collected on each participant was

substantial, the study sample was numerically small and, therefore, not necessarily representative of the entire target population. Moreover, participants' practice was sampled at just a few points in time, with a significant time span between the samples.

Flow, or optimal experience, has been positively correlated with creative thinking, a higher-order thinking activity. In this study, flow was assessed by way of participants' musical interpretation of music and verbal reports. There was, nevertheless, no independent, objective verification of these assessments of creative thinking until the end of the study. This assessment was given by the three examiners, based on a viewing of one practice session – albeit one in which the participants had the chance to verbally report on their practice strategies. Until that time, the content and process of creative thinking was self-assessed, with guidance from the teacher. The product was assessed by two third parties: researcher and examiners.

Attempt was made in this study to control for the influence of teaching, by ensuring that only one teacher was responsible for instructing the participants. Effort was devoted to soliciting feedback on methodologies used, particularly on the matters of teaching of learning strategies and creative thinking during practice. The study was undertaken, however, with the realization that the quality of teacher feedback might not be sufficient enough to draw meaningful conclusions concerning methodologies used, because feedback was in the form of written responses to open-ended questions. Moreover, the teacher methodology questions were not field tested by a third party. The possibility therefore existed that answers might be too trite to be meaningful.

Nielsen's (1999) study of instrumental music practice involved university-level, advanced organ students, who were presumably mature and experienced enough as

performers to feel comfortable having their practice videotaped. The assumption that the same response would be true in this study might have been misguided, due to the fact that participants were of younger age, and at earlier stages of musical development. Level of discomfort in the presence of the video camera may have had a bearing on the quality of practice observed. Even though attempt was made during *VRDuring* and *RRAfter* to assess participants' feelings about being video-taped, any discomfort shown would represent a confounding variable.

Related to the issue of accurate self-assessment is the assumption that participants have a clear sense of influence that external factors have on their practice habits. This assumption may not have been valid, though. For example, a participant's study habits at home might have involved substantial background noise. While the participant might have deemed this factor to have contributed positively to the learning environment, the opposite effect might be true.

Interview questions were designed to include open-ended questions, under the assumption that participants would feel free to reflect freely on the nature of their practice. This assumption is valid only if participants feel inclined to respond openly, and if they perceive the structure of the interview as informal enough to provide them with flexibility in responding to questions (Creswell, 2002, p. 421).

Summary

The purpose of this study is, therefore, to investigate the nature of practice, a process that is as important in mastering the challenges of musical performance as it is in meeting expectations of other areas of learning. More specifically, this study will seek to investigate the influence of creative thinking and cognitive problem solving on

performance proficiency.

The next chapter will begin by describing in detail the findings of the study. In order to bring some perspective to these findings, themes found in them will then be identified and described.

CHAPTER FOUR: FINDINGS

This chapter will first summarize the teacher's responses to the questionnaire. Highlights of the observations made of each of the three participants will then be presented: the researcher's observations of practice behaviour over the course of the study; the participants' answers to the interview questions; and the examiners' interpretations of practice behaviour. Trends in the data will be analyzed and interpreted. Finally, common themes emerging from this analysis and interpretation will be discussed.

Teacher's Responses to Written Questionnaire

In the teacher's responses, it was clear that she sought to build all teaching and learning upon a foundation of positive relationship with her students. She explained that each lesson opens with a warm welcome, in which she shows interest in the lives of her students. This relationship also affects the content of learning, as reflected in the opportunity she gives students to choose the repertoire they would like to study, borrowed from her own library of resources. Her rationale for this approach is to make the study of piano "an enjoyable activity, with challenges and successful accomplishments."

The teacher showed evidence of working according to a planned curriculum. She indicated that she discusses long-term objectives of learning with each of her students, and uses the possibility of earning high-school credit as a means of clarifying those objectives. She uses material published by the Royal Conservatory of Music as the main source of learning material, since it constitutes the curricular basis for high-school accreditation, but she has a variety of other resources of comparable difficulty level. When asked to identify strategies she instructs students to use as they practice, she

identified the following methods: "[R]epeat difficult passages hand separately and together; divide song into sections."

In the outline of a typical lesson plan (given as an answer to question #3 in the questionnaire), the teacher gave an overview of the elements of learning addressed at lessons, which indicated that each lesson was an inherently structured time of teaching and learning. "Technique is usually first…Each song is played and corrections, suggestions are given and assigned for the following week. Sometimes several bars…are drilled at the lesson so that [students] know how to address similar sections at home." It was difficult to ascertain from this response the kind of learning that typically takes place by way of these exercises. Similarly, the line, "new songs are introduced, with direction given as to how to practice," indicated that guidance is given, but there was no explanation of how students would apply that guidance in practice at home.

In question #5, where explanation was given of strategies taught, the teacher identified a variety of practice methods – for example, "play slow and accurate note reading" – but there was no explanation given of *how* those strategies were taught, or how she would check the effectiveness with which the students had practiced the strategies taught. It may well be that students left lessons with a clear idea of how to practice assigned music. If so, this possibility was not clearly explained by way of written responses.

On a related note, it was not clear from the teacher's answer to the last question in the survey, how she helped students translate creative thought into expression through practice. She sought to offer students styles of music that would interest them. Yet, while being interested in playing a style of music might very well increase the possibility of

playing music expressively, interest does not guarantee expressive playing. There was no evidence in the response that matters, such as phrasing, or melodic shape, were addressed in lessons.

It was interesting to note, incidentally, that one of the three pieces of music, "To a wild rose" (MacDowell), was listed in the Royal Conservatory of Music official examination syllabus as a piece eligible for use at examinations (Royal Conservatory of Music, 2001, p. 53). The other two pieces would be considered by the Conservatory as "popular selections," because they are "nonclassical selections"…that have "musical value and [present] rhythmic or technical challenges pertinent to the grade level in which [they have] been placed" (p. 12). The actual *Popular Selection List* (2005) did not, however, include either of the other two selections. They would not, therefore, be eligible for Conservatory examination purposes.

Observations of Mary's Practice Behaviour

Mary practiced hands together at every observed session. Her speed was consistently tempo I. In the first sequence, unresolved errors involving pitch and rhythm occurred 5 times during the first session, and 4 times during the second session. In the second sequence, though, errors of this nature occurred much less frequently – once during the first session, and not at all during the second session. Hesitations occurred 9 times during the first session of the first sequence, but none were observed on any other occasion.

Mary was always focused on playing well, although she was seated rather low relative to the keyboard in a chair. This seat position forced her to elevate her wrists, limiting her ability to move her hands freely.

Although Mary did not practice hands separately, she did show some initiative in segmenting the music. One longer-than-measure segmentation occurred during *VRDuring* of the first sequence of observations. In *VRDuring* and *RRAfter*, this segmentation occurred, she explained, because she thought she should have created more dynamic contrast at two points in the piece, and that she should have made an *accelerando* more noticeable. She did not immediately go back, though, to practice any of the pertinent parts of the music until the researcher had verbally prompted her to do so. It was at this point that the segmentation occurred. It would have made sense at this point for her to practice all the areas she discussed. In fact, she practiced only one of these areas, without evidence that the goal for improvement had been addressed. In fact, note errors occurred during the segmentation where none had existed previously. Mary did not consider it important to practice this segment again, or to report on what she had done, or might do, differently.

Mary's primary aim seemed to be to play through the music as best as she could. Her facial features and body posture did not always reflect a focus on engaging in meaningful practice. This behaviour was especially evident during the second sequence of observations.

In the post practice interview, Mary presented herself as a humble, caring, and yet responsible person. She also showed evidence of being intrinsically motivated to learn. She claimed that her involvement in this study was very important to her because "I really love to play the piano for others, and for enjoyment." These goals, as well as her desire to teach others to play the piano, represent her motivation for studying the piano. She also expressed a desire to study to improve her musical abilities.

Her activity aside from home schooling includes involvement in a church-based Bible study and craft group that sings and plays at old-age homes; lessons in swimming and jiu-jitsu; soccer; basketball; and catechism. She also works at a local greenhouse. In total, Mary spends 8 to 9 hours per week in these activities. In addition, she helps her mother clean the house once per week.

Mary described her relationship with her parents as strong and very positive. She identified them as her mentors, and she said they give her the space to come to them if she needs their advice. They choose the time, place, and environment in which she does her schoolwork. She chooses the time, place, and environment of her piano practice. Mary described her parents as the ones responsible for her taking piano lessons. They support her love for piano, as well as her desire to play well. She identified them as the only influences on her piano practice.

Mary described her study habits during piano practice as being the same as those she uses in doing her schoolwork. She works hard at both of them, sometimes talking through challenging assignments. In any case, she persists in continuing her work to its completion.

The location of the piano in Mary's home is the dining room, where she practices for between 15 minutes and 1 hour per day. She is not supervised, but is distracted by family members, who are either working in the dining room or walking through it. Beside the piano, for example, is the computer, at which her mother is often working. Her brother does home schoolwork, also in the dining room, at a desk against the wall opposite to the piano. Mary explained that she is also the frequent target of her little sister's attention. Mary said that she has no sooner started her practice than her sister

frequently asks her to play games with her. In spite of all of these potential intrusions, Mary claimed that she is able to tune the noise out, unless someone taps her on the arm. If the noise does become too significant, she either stops practicing, or tells others to leave the room.

Mary explained that her practice strategy in dealing with difficult music is to practice hands separately until she understands it, or she "yells mom," because her mom has studied piano through the grade 10 level of Royal Conservatory of Music. As she practices a piece of music, Mary stated that she "thinks about the piece, about how the dynamics should be better, and I occasionally daydream." She makes practice fun by practicing songs she likes with the songs she is learning. Her retrospective view of her observed practice behaviour in this study was that it accurately represented her normal routine. She felt that she was concentrating on practice to the same extent that she normally does, and she forgot about the presence of the video camera.

The examiners took note that Mary's practice of *To a wild rose* was free of hesitation, and showed accurate rhythm and articulation. They deemed the touch as being a bit heavy and tense, resulting in a somewhat mechanical style. Hands were not coordinated in places, though tonal balance between hands was evident.

The examiners viewed the heavy touch as an impediment that prevented Mary from "sensitively conveying the colour, contrast, and image of a wild rose having a beautiful perfume scent." Another examiner echoed a similar view, that creative expression was evident through phrasing, but playing lacked colour contrast because the style was somewhat stiff.

The examiners explained that part of the solution to shortcomings related to

expression would be in adjusting the height of the bench to the piano, so that hand motion would occur more easily. A more fundamental question was raised, though: "The purpose of this 'run-through' was not clear: Was it to highlight dynamics, or just to see if she could play from start to finish?" The examiners also commented that pedaling lacked clarity, and evidence of dynamic contrast and phrasing was lacking. Segmented practice could help to polish these aspects of the performance.

Observations of John's Practice Behaviour

As described earlier, about 10 minutes of time was spent reviewing the study procedure with John. His assigned piece was *Ceremony for Peace*, written by Faber and Faber.

John's practice of his music was done hands together at all sessions. During both days in the first sequence of practice, he practiced at tempo III, but by the second sequence, he was practicing at tempo I. Unresolved errors were of pitch and rhythmic nature. In the first sequence they occurred 5 times on day 1 and 4 times on day 2. In the second sequence, these errors occurred 3 times on day 1, and 5 times on day 2. Hesitations occurred frequently in each bar during the first day of the first sequence, decreasing to approximately one every other bar on the second day. During the third week of practice, hesitation still occurred, particularly in the middle part of the piece. Focus shifted back and forth between music and fingers as often as the hesitations occurred. No segmentation occurred during the first sequence, though, on both days in the second sequence, shorter-than-measure segmentation, unplanned in nature, occurred 7 times. At no time did John give evidence, either during practice or during reporting, of an awareness of dynamic contrast, phrasing, or note articulation.

John gave no verbal or facial reaction to practice, though it was evident in his focused manner that he desired to practice well. On the other hand, body posture in general indicated slouching. One striking observation was that, during *VRDuring* of both sequences, John did not report on his strategy during practice, though he was aware of the opportunity to do so. In *RRAfter* at the end of both sequences, John's comments centred on points where pitch errors occurred. His reporting indicated that he was aware that these errors had occurred, but he did not explain what corrections were appropriate, or how he could apply them. He made no comment on rhythmic errors that had occurred.

In the post practice interview, John was able to clearly explain how he seeks to transfer music-related skill he is learning through piano practice to other areas of learning: Once he reaches high school, he wants to be able to transfer music-reading skills to learning of other instruments, to learn music on these instruments without too much difficulty, and to play this music well.

This vision explained John's desire to function independently and responsibly as a piano student. He stated that, since the age of 5, when he took up his mom's offer to provide for piano lessons, he has adopted ownership of preparing for and attending piano lessons. "I am responsible for taking lessons. I walk to lessons from school, and afterwards I walk home." If a lesson time needs to change, then he works out another time with his mom's help. These comments reveal positive attitude and motivation to study that was reinforced in other feedback. "My motivation for practice is to do well at lessons each week."

This approach to learning was a denominator also evident in John's explanation of his approach to schoolwork. He generally finds schoolwork easy to do, and said that he

does well on tests and assignments. Consequently, he frequently seeks to forge ahead of his class in his studies, "so I ask for the next day's work. I take this work home and learn to do it on my own."

The piano John practices on is in the living room, which is open to the front foyer of the house. A door, usually closed during his piano practice, links the living room to the kitchen. John practices either before school at around 7 a.m., or after supper, around 7 p.m., depending on when his sport-related commitments are scheduled. He usually practices 20 minutes per day, 5 days a week. He is not supervised while he practices, often doing so while his mom is washing the dishes. The family dog, an integral part of family life, sometimes represents a distraction, because it sleeps in the front foyer facing the piano. The dog requires constant supervision, so, if it moves, John needs to stop practice in order to ensure that someone else is supervising it. His sister, who sometimes helps in this regard, occasionally reads silently in the living room on the couch beside the piano. John claimed that her presence there does not represent a distraction. Otherwise, the living room is quiet while he practices piano. Likewise, John's homework environment is quiet. He does it in his bedroom, at a desk.

His parents' influence on his practice is limited to their occasional reminder to "go do it." They do not typically accompany him to lessons. No other factors influence the amount or quality of his practice, except the dog. If he is the only one home, he is responsible for taking the dog outside, a role that limits the quality and quantity of his practice.

At the post practice interview, John stated that he was concentrating "pretty hard" while his practice behaviour was being observed. He was aware of the presence of the

video camera, and he stated that its presence improved the quality of his practice. He was, however, unsure of the purpose of the study, asking "What's it supposed to do? I don't get it." Once the researcher explained that the aim was to examine how he practices, and that he would be able to see the study's results, John showed understanding of its meaning, and indicated that he considered it important to know how well he was practicing.

John explained that his strategy in practicing is to focus on notes and rhythms, playing difficult passages slowly and repeatedly, though not usually hands separately. In this approach, he tries to anticipate notes and rhythms a bar or two ahead of time. John makes time spent in this activity fun by practicing songs he knows he is good at, and songs he likes. He plays these songs during regularly scheduled practice time.

Another dimension of John's life that became apparent is that he is heavily involved in extracurricular activities and part-time work. His extracurricular involvement includes a variety of team sports, along with which he delivers newspapers in the morning. He has, moreover, become a valuable source of help to a physically-challenged lady in the neighbourhood for whom he does yard work each week. All told, each day John commits one-half hour of time before school and 3 hours after school to these activities. He is generally involved all day on Sundays with sports activity. This time does not include that required for homework. John was able to describe in detail the time required for each activity in which he is involved, showing that he has developed the ability to budget his time.

In their assessment of the last observed practice, the examiners remarked that the tone was balanced between hands, though the style of playing was mechanical because of

heavy touch. Rhythm and articulation were often inaccurate, and hesitation was obvious at many points in the piece. Phrasing was not evident in the playing, so the melody lacked expression and shape.

The examiners recommended that much more care be exercised, by listening more self-critically to music being practiced. Slow practice was needed to work on fluency and inaccurate rhythm. At present, by starting from the beginning of the piece at each sitting, the beginning would improve, but the middle section would take longer to master. This middle section was, in fact, the weakest in the piece. One of the examiners noted that practice "does not mean playing through a piece from beginning to end once or twice." Greater attention to the score was required in order to try some optional markings – for example, the 8^{va} – in order to listen for their effects.

Observations of Susan's Practice Behaviour

Prior to the start of the first session, about 10 minutes of time was spent reviewing the study procedure with Susan. This measure was undertaken to encourage the participants to feel "at home" as they practiced their music with the researcher present, and with a videotape recording their behaviour. Susan's piece was an arrangement, written by Faber and Faber, of Paul Desmond's *Take five*. The following section describes observations made of her practice behaviour over the course of the two sessions, taking into account her reports during and after the second day of each of the sessions. This section will also summarize her responses to post practice interview questions.

Susan practiced exclusively hands together. At the start of the first sequence of observations, she practiced at tempo III (less than one-half of concert tempo). By the end

of the second sequence, she was practicing at tempo II. On the first day of the first sequence, unresolved errors involving pitch and rhythm occurred 12 times; this type of error took place 6 times during the second day of practice in this sequence. During week 3 – the second session – unresolved errors involving pitch and rhythm occurred 6 times, and once on the second day. Hesitations occurred in each bar during the first sequence of practice. During the second sequence of practice, hesitation still occurred, though only in the technically more challenging middle section of the piece. Unplanned, shorter-than-measure segmentation occurred frequently in each bar during both days of practice in the first sequence of observation because of hesitation. These short, unplanned segmentations decreased in frequency in the second sequence, to 8 times the first day, and 6 times the second day. In general, unplanned, shorter-than-measure segmentations occurred in direct relation to the number of hesitations and unresolved errors that occurred. One longer-than-measure segmentation occurred during the second day of the first sequence, in which Susan stated that her goal was to "play [the segment] again." This event did not, however, yield a noticeable improvement in the performance of the rhythm in the bars rehearsed. Susan's focus shifted back and forth between music and fingers, as often as hesitations and unresolved errors occurred.

On the first day of the first sequence of observations, Susan reacted with "oh" or "ah" 5 times to mistakes she made. The next day, similar reaction occurred 6 times. While she did not show any facial reaction to her practice during the first day of the first sequence, on the next day her facial features showed that she did not care as much about setting and achieving meaningful goals in practicing. Nevertheless, by the start of the second session, her facial expression showed a renewed desire to conduct focused

practice.

In her retrospective debriefing reports after practice, Susan assessed her ability to play pitches accurately. She did not reflect on her practice of rhythms, which is significant, given the number of unresolved rhythmic errors that occurred. Furthermore, even though dynamics, note articulations, and phrasing were marked in the score, Susan did not discuss these issues in her reports during or after practice.

One of the themes that emerged from Susan's post practice interview was her positive attitude toward both practice and other activities. She expressed a desire to keep a routine of practicing regularly, and she enjoys practicing songs that she likes, even though her goal is not to make practice time fun. Insofar as her involvement in other activities is concerned, Susan showed a desire to function responsibly. She dusts her grandmother's house each week, and is also involved in weekly horseback and dance lessons.

Susan's practice environment is the living room, which can be closed off from the rest of the house. This room also has a computer, which is often being used when she practices piano. Susan did note that the noise generated by people working at this computer distracts her from practicing. Her practice usually occurs when she gets home from school, for durations that vary, depending on available time, from 5 to 30 minutes per day. She is unsupervised as she practices, though her parents occasionally ask to ensure that she has done it. Susan identified her mother in particular as the parent responsible for her taking lessons.

Susan does school-related homework in her bedroom, at a desk in a quiet environment, free of any distractions.

Susan's explanations of her practice strategies reinforced the researcher's observations of her actual practice behaviour. When she practices, she aims to "make no note-related mistakes," and tries to "get the rhythm right." She deals with difficulties she encounters by "playing right through the song," trying to master as much as she can as she does so. She explained that her approach to schoolwork is similar: She tries to "get through it in one run-through, with as few mistakes as possible." An exception to this rule is tests, in which she checks her answers to difficult questions.

Susan stated that she found this study important, though simply to find out what it would be like, and because her piano teacher encouraged her to participate.

The examiners assessed the degree of performance proficiency of Susan's second day of practice in the second sequence – the last day practice was observed – and then explained practice strategies that would address any shortcomings. The examiners interpreted the style of Susan's playing as heavy and, therefore, mechanical. The left hand was too heavy, with notes held too long, and the articulation needed greater contrast. The swing style of the rhythm was not always played accurately, and the rhythm itself was insecure in places as reflected by hesitation in playing. The melodic line lacked phrasing, which left it devoid of expression or shape.

The examiners explained that segmenting the music would allow for more effective practice of details of articulation, rhythm, and fluency. By starting from the beginning at each sitting, the beginning would improve, but the middle section would take longer to master. Adjusting the distance from the piano might give more flexibility and may, therefore, result in more fluent playing.

Examiners' Appraisals of Participants' Performance and Practice Behaviour

Examiners were unanimous in their judgment that *To a wild rose*, as played by Mary, was steadily and confidently played, though there were hand-coordination problems, especially on the first page of music. The downbeats were played quite heavily, giving the music a plodding sound. The style of playing should, in fact, have given the impression of a beautiful wild rose having a perfume scent. A more relaxed style, coupled with a more sensitively shaped melody, would have achieved the desired result.

John's performance of *Ceremony for peace* required more difference in tone between the thematic sections. The performance started well, but hesitations and errors of rhythm and timing were evident from the bottom of the first page onward. The shape of the phrases needed greater clarity in order to better reflect the majestic nature of the music.

Examiners considered Susan's playing of *Take five* to be too heavy in the left hand, causing the style of playing to be somewhat mechanical. The swing rhythm was quite well played until technical insecurities became apparent. Articulation needed more contrast, and the melodic line in the right hand needed to project more clearly, with greater melodic shape.

Common Themes in the Narratives

Four sets of data related to the participants' practice were studied: the teacher's methodology; participants' responses to interview questions; their behaviour as they practiced; and the examiners' appraisals of participants' performance proficiency and practice behaviour. Common patterns evident in the data are summarized as themes. The

subject of this section is to identify and describe these themes.

Teacher's Methodology

The teacher's responses to the questionnaire showed that she followed a planned curriculum, as evidenced by the type and variety of resources she used, the objectives she sought in her consultations with students, and the wide selection of strategies she used. She indicated that the RCM repertoire was her primary resource material because it represents a pedagogically sound foundation for learning, though she does not typically register her students for RCM exams. Although there was no indication that the teacher typically registers her students in Conservatory exams, she stated that she relies on Conservatory repertoire in part because students can earn high-school credit by taking its exams. In any case, the teacher did explain that she expects her students to prepare music for performance at her studio recitals. All of these factors show that an ability to perform music proficiently is one of her teaching objectives.

If performance proficiency was one objective of the teacher's approach to learning, she also sought to work out a clear, long-term purpose for learning, in consultation with her students. This step allowed the teacher to "hear her students out," and by giving them a voice in the nature and direction of their learning, the teacher "gives students purpose and commitment to practice and study."

Another evidence of planned curriculum was the teacher's use of a wide variety of other music to supplement RCM repertoire. Although she indicated that the supplemental music was somewhat easier material for students to learn, she used this approach to maintain student interest in learning by offering music that students would recognize and enjoy learning.

The teacher's effort at making learning enjoyable was linked to her desire to develop a positive relationship with her students. "My goal is that each student leave their lesson happy, encouraged, and motivated." Her care for the content of study was just as important as her care for her students' well-being.

The teacher indicated that she addressed practice strategies in teaching, though it was unclear how she intended the students to apply the strategies to learning. Where she identified "practicing hands separately and together," and dividing a piece into sections, as two important practice strategies, there was no explanation of how she taught students to develop the awareness of how to apply these strategies. Instead, the strategies read as a list of options from which the student could choose if desired. Technical studies were identified as a part of each lesson, but the teacher did not address the method by which this lesson component was taught. There was no explanation of the intended content or manner of practicing this element of learning, or how students could develop an understanding of how technical proficiency was related to their learning of music. On a similar note, the teacher explained that she nurtured creativity "by lending music of a variety of styles and levels" to her students, and made it a practice to share her "personal response to a song" as a way of inviting students "to think of how the music speaks to them." It was, nonetheless, unclear how the teacher, through these exercises, sought to help students translate creative thought into expression through their playing.

Participants' Responses to Interview Questions

All three participants came across in the post practice interview as having positive attitudes toward their learning. All three indicated a motivation to do well at weekly lessons and therefore, placed high priority on maintaining routine practice time. They

also reflected commitment to extra-curricular activity in addition to piano lessons.

Mary, John, and Susan all expressed motivation to do well at weekly lessons. Mary and John could explain how this motivation fit into larger, personally meaningful purposes. John saw his piano training for its practical value: "My goal is to be able to play music when I'm older, and to be able to transfer music-reading skills to learning of other instruments." Mary desired to "study to improve," in order to "teach others how to play piano." Mary went so far as to say that participation in this study "was very important to me, because I love to play the piano for others, and for enjoyment," indicating that her love for music was the motivation for sharing it with others. Aside from being motivated to do well at weekly lessons, Susan expressed no goal in taking lessons.

Far from being isolated to the music realm, this motivation was reflected in other aspects of participants' lives. All three were involved in routine activities in addition to piano studies, and showed sincerity in seeking to live up to the commitments required in these activities. Susan was involved in weekly horseback riding lessons and dance lessons, and dusted her grandmother's house every week. John was involved in several individual and team sports, such as archery, volleyball, and soccer. He was also responsible for delivering newspapers along a route 6 days a week, and for keeping up with any yard work that a physically challenged lady in the neighbourhood needed. Mary was enrolled in catechism (lessons in church doctrine) and Kingdom Seekers, a church-based group geared toward Bible study and crafts that sang and played music for residents of homes for the aged. She participated in swimming lessons, jiu-jitsu, soccer, and basketball, and worked at a local greenhouse part-time.

In all of the above regards, these young people gave ample evidence of positive attitude, of motivation to do their best, and of living up to the responsibilities of any extra-curricular commitments with which they were involved.

Even though all participants practiced on acoustic pianos that were stationary in assigned locations in their homes, participants' comments revealed that their practice was regularly disturbed by others in the house. The pianos in Susan's and Mary's homes were in the same room as the computer, which for both of these participants represented a distraction whenever it was being used. Mary explained that the dining room, where the piano was situated, was a beehive of activity, in that it was a thoroughfare as well as a place where siblings did their homework. She claimed that she was able to tune out the noise in this area, unless someone tapped her on the arm while she was practicing. For John the dog, an integral part of family life, represented a distraction. The piano in John's home was located in the living room, and John's back faced the foyer while he was practicing. The dog would normally lie in the foyer while John was practicing. Even though the living room was normally quiet, if John heard the dog move while he was practicing, his attention shifted to the dog to ensure that it was being supervised.

Participants' time spent in daily piano practice ranged from 15 minutes to 1 hour. Mary gave this range as her daily practice time. John stated that he usually practices for about 20 minutes per day, 5 days a week. Susan claimed to practice from 5 minutes to 30 minutes per day. All three participants explained that the amount of time they practiced each day depended on their schedule that day. All participants stated that their practice was unsupervised.

All participants gave evidence of a positive relationship with their parents, and

noted their parents' support for their piano study. Mary explained that "my mom and dad are responsible for my taking piano lessons. Both support my love for piano, and both want me to play well." She described her parents as her mentors, and they "give me the space to come to them if I need their advice," although "they choose the time, place, and environment of my schoolwork."

John had learned to take independent ownership of his piano studies, even though his mother was the initiator and ongoing supporter of this learning. John was in the habit of getting to and from lessons after school on his own and, if a lesson time needed to be changed, he worked a new time out with his mother's help. His parents monitored his practice simply by reminding him that it needed to be done if he had not already done it.

Susan explained that her mother was mainly responsible for her taking lessons, although both parents occasionally asked if she had practiced, just to ensure that she had done it.

All participants indicated that parental influence played a significant role in their piano study. In fact, all three specifically identified their parents as the only influences.

All participants demonstrated the character of independent learners. This assessment was made based on all participants' desire to do well at weekly lessons with minimal parental influence.

Participants were asked to describe how they felt as their practice was being recorded. John claimed that the presence of the video camera "improved the quality of my practice." While Mary forgot about the video equipment during her practice, Susan said that its use made her concentrate "almost as well as I normally would."

Participants were asked what they thought about while they were practicing, in

order to assess the target of their focus. John and Susan were concerned primarily with playing notes and rhythms accurately; John added that he tries to anticipate notes and rhythms a bar or two ahead of time. Mary specified dynamic contrast as her focus. In explaining how they dealt with difficulties they encountered during practice, John and Mary claimed to use practice strategies identified by Nielsen (1999). Specifically, John said that he practices difficult passages slowly and repeatedly, though he was not in the habit of practicing hands separately. Mary did identify hands separate practice as her strategy of choice, though she confessed that she "yells mom" whenever she did not feel that this approach worked. When asked to explain further, Mary stated that her mom had achieved an advanced level of piano performance – grade 10 RCM, and she was, therefore, a valuable support. Of note was that neither John nor Mary was observed to use these strategies as they learned their music. This discrepancy revealed that the practice John and Mary thought they were following did not match their actual practice. Susan, by contrast, explained that her approach to difficult music was to "play right through the song, trying to master as much as I can."

All participants gave evidence that their behaviour while practicing piano resembled their behaviour while doing homework for school. Susan, who practiced music by playing through it, said that she tries to get through homework "in one run-through, with as few mistakes as possible." She explained that the only schoolwork she approached differently were tests, which she said she would check after having answered difficult questions. John's independent nature was reflected in his explanation of how he learns at school. He claimed to be "usually ahead of my class in my studies, so I ask for the next day's work." In forging ahead at home, he said he strove to learn material on his

own because he felt it was easy to do. As such, he said that he has done well on tests and assignments at school. Mary said outright that "my study habits during piano practice are the same as those I use in doing my schoolwork." She explained that she works hard at them both, sometimes talking through her challenging assignments. In any case, she made the point that she persists in completing assignments.

Observations of Participants' Practice

All participants showed evidence of learning progression in their study of assigned music. They were focused during practice, but their intent was mainly to play only pitches and rhythms accurately. Except for Mary, participants did not appear to consider dynamic contrast an element worthy of attention. Because other aspects of the music, such as phrasing of the melody, were not addressed, participants were easily convinced that they could play their music proficiently. This finding may explain why participants spent less than expected time practicing their music. Moreover, pitch and rhythm are mechanical in nature, so it was not surprising to hear a mechanical style of playing from all participants. This consistent finding could have been due to the teaching participants received. More specifically, it is possible that participants were instructed that this level of performance reflected proficiency. It is also possible that the teacher intended to address the question of how participants were to play their music expressively, but that this element of learning was not checked at lesson.

Participants did not offer much in the way of reporting on their practice, either during or after the second day of each sequence. They had difficulty identifying parts of music that required practice and, even when they were able to discern that their interpretation of a section of music was incorrect, they were hard-pressed to explain why

or how they might solve the problems through practice.

Consequently, participants' approach to practice did not show much evidence of planned segmentation, or of slower choice of tempo. At no time did any of the participants practice hands separately. This choice of practice behaviour resulted in persistent, unresolved errors in the practice of John and Susan. Mary was the only participant to deliberately practice by segmenting her music. She was able to resolve errors over the course of observed practice.

Summary of the Chapter

Observations made on participants' practice behaviour, and interviews held with them, were described. An account of the teacher's responses to the questionnaire was summarized. Following analysis, themes were then inferred from the data. The participants, having different learning styles, shared responsible character and positive attitude, and were motivated to become proficient piano players, though the amount of time spent in focused practice was sometimes questionable. The teacher's methodology, which was founded on a desire to develop a positive relationship with her students, resonated positively with participants. It was not clear from her explanations how she taught and assessed practice strategies and creativity. Examiners' appraisals of participants' performance proficiency indicated a need to practice more self-critically by more intentionally applying practice strategies in a problem-solving manner.

The patterns, or themes, identified and described in this chapter will serve in the next chapter to draw conclusions. These generalized statements, which represent the findings of this investigation, will serve as the bases for proposals on how teaching and learning for proficient performance could occur, both in music and in other subject

domains.

CHAPTER FIVE: CONCLUSIONS AND IMPLICATIONS

This chapter will interpret the study's findings by deducing conclusions, which will serve as the basis for proposing implications. Insofar as this study was limited to the study of factors that affect performance proficiency in piano, implications will be formed on the issue of learning in music performance. This study does, however, involve the broader topic of learning strategies, a subject relevant to all areas and levels of schooling, so conclusions will be used to make implications for the way learning is done more generally.

Conclusions

The aim in observing the participants in practice was to capture as completely as possible methods that participants used as they progressed toward the goal of proficiently performing their music. Ideally, these methods should involve monitoring and planning practice, as well as showing awareness of musical structures in the music they were working on (Palmer & Drake, 1997). A variation of Nielsen's (1999) study was used to identify and describe these components of participant behaviour.

One significant pattern that emerged from these observations was that participants were not in the habit of planning their practice. None of the participants applied the simplest of strategies, practicing hands separately. Mary stated that she used this practice strategy, but she was never observed to use it. The cost of this oversight was most evident in the practice of John and Susan. To their credit, these two participants did use a variety of tempos: both practiced at tempo I during the first sequence, and tempo III during the second. But persistent, unresolved errors indicated that tempo choice should not have been the only considered practice strategy. The frequent hesitations were symptomatic of technical insecurity, which could have been more effectively addressed in hands separate

practice. Similarly, the shorter-than-measure segmentations observed in the practice of John and Susan took place in the challenging sections, and reflected hesitation more than they did planned practice strategy. Of Susan's practice the examiners noted, "Segmented practice will allow more effective work on details of articulation, rhythm, and fluency." Another examiner captured the essence of all of the above ideas: "Practicing does not mean playing through a piece once or twice." In fact, only one of the participants, Mary, applied a longer-than-measure segmentation, yet she did so during only one session, and then only as a result of prompting from the researcher.

Another hallmark of effective practice lies in how well practice is monitored. In the performance of music, monitoring is a problem-solving activity because it requires diagnosis of a problem in the way music is played, followed by "corrective action…based on information to which the producer has access" (Palmer & Drake, 1997, p. 369). David Elliott (1995) calls monitoring "music in action", "musicianship" (p. 54), which has a procedural essence. This kind of "in-flight" decision-making capacity is used by competent musical performers. They use this ability

> as they construct and chain musical patterns together; as they vary, transform, and abstract musical patterns; as they judge the quality of their musical constructions in relation to specific criteria and traditions of musical practice; and as they interpret the emotional expressiveness of musical patterns. (Elliott, p. 56)

In observations of participants' practice, two behaviours, one accompanied by the other, indicated that monitoring was taking place. In the first place, there was evidence that participants knew something was wrong, and they were able to diagnose specifically *how* their playing was wrong. In terms of actual practice, a diagnosis involved

recognition of error of any element of music from, for example, pitches and rhythms of notes, to shape of melodic line. Second, there was evidence that participants knew how to fix errors. A denominator required for both diagnosis and correction is a critical ear. In other words, participants had to show that they were listening to their practice self-critically in order to demonstrate that they were monitoring their practice.

Where playing was technically sound, examiners were satisfied that participants were listening self-critically to their playing. Indeed, it could only have been due to self-critical listening that the number of technical errors decreased. In fact, evidence of monitoring resulted in comments like, "the performer has obviously achieved a certain ease with the piece." This fluent playing resulted from building concepts of what the outcome should be (MacKay, 1982, p. 502).Where participant playing was technically suspect, examiners commented that a self-critical ear was needed. "Much more care needs to be applied, by listening to practice more self-critically," wrote one examiner. Comments of this nature always occurred in response to persistent, unresolved errors, particularly of rhythm and articulation, that resulted in playing that lacked fluency. Where these views were expressed, evidence revealed that participants were not diagnosing errors. Could it be that the teacher had not taught the participants how to perform this self-reflective skill? This is a question for further research.

Performance proficiency depends on the performer's accurate awareness of what the piece of music should sound like. The second part of the monitoring process in practice, therefore, should involve applying the corrective action required for participants to achieve this proficiency. The examiners addressed this issue by reflecting on the effectiveness of participants' practice. Examiners often assessed this effectiveness by interpreting the purposes evident in participants' practice behaviour.

Examiners deemed the practice they observed of all three participants as more of a "play-through" than engaged practice and, on one occasion, wondered whether participants had not intended a more significant purpose. "What was the purpose of this particular 'run-through'?" asked one examiner. While this question was not necessarily indicative of poor practice, it did reveal that the participants, in the practice observed, thought they were performing their pieces proficiently.

Musical practice also leads to proficient performance if it shows sensitivity to "structural relationships among sequence elements" (Palmer & Drake, 1997, p. 370). Specific examples of this kind of sensitivity would include the manner in which important beats are played relative to weaker ones and the way in which the notes of a melody are contoured dynamically in order to give it shape and colour.

One of the research questions in this study was to determine whether participant motivation affected quality of music performance. This step was included based on O'Neill's finding that quality of music performance is determined by motivation and amount of practice undertaken (Sloboda, 2000, p. 400). Data observed in and reported by participants indicated that all three participants were motivated to learn. All were interested in at least finding out "what the study would be like," and two of the three participants expressed a specific desire to know how well they were practicing. Further evidence of positive motivation was found in all participants' stated desire to accept and maintain responsibility for fulfilling the terms of any obligations to which they had committed themselves, piano practice or otherwise.

A reason these participants were chosen was because of their different learning styles. One of the research questions was whether differences in learning style had any influence on skilled piano performance. The data suggest that it does not. There is the

question, however, of what the teacher might have done in a differentiated way in order to meet the varied learning styles of the participants. While there was no indication of this practice in the teacher's questionnaire responses, no question was directed specifically at this issue.

There were many indicators showing that all three participants demonstrated the same learning behaviour, attitude, and motivation regarding their practice. The examiners' appraisals of participants' performance and practice strategies were likewise remarkably similar.

There is question on the matter of whether participants were in the habit of practicing sufficiently. Stated practice times ranged from 15 minutes to 1 hour per day. Even though participants did not state average daily practice time, it is safe to say that at an intermediate level of study, 15 minutes of practice per day is insufficient. Furthermore, all three participants indicated that they experienced distractions, not necessarily of their own making, in their practice environment. Thus, even if participants were committing sufficient time to practice, it is questionable whether that practice was of a focused nature.

The teacher's goal of developing a constructive, positive relationship with her students was evident in remarks participants made during post practice interviews. They were aware of, and showed appreciation for, her desire to assign music that they enjoyed playing. All three participants noted that this aspect of their study positively influenced their practice, with comments like, "I make practice time fun by practicing songs I know I'm good at, and the songs I like." These fun songs were presumably those learned through formal piano study. The teacher regularly loans music from her library to students, further evidence that she seeks to centre learning on her students. Two of the

three participants were also able to clearly articulate their personal goals in taking lessons, a result likely due to the teacher's practice of addressing long-term objectives for learning in consultation with her students.

A major reason parents enroll their children in piano lessons is due to an increasing awareness that effective music practice may help to develop higher-order thinking skills. This result is possible, though, only if the content of these skills is sufficient (Smith, 2001, p. 358). In other words, development of higher-order thinking skills will occur by way of practice, only if instructors are "grounded in a deep, widely-accepted understanding" of the phenomenon (p. 358).

In her response to the questionnaire, the teacher listed a wide variety of strategies she teaches in helping students learn a new song:

> …play slow and accurate note reading; following rhythm and articulation; add dynamics and tempo; try memory if a performance piece; repeat difficult passages hands separately and hands together; divide song into sections; alternate order of songs being practiced for the week; break up practice time; listen to CD of the song, or teacher play a portion.

Are these ideas reflective of learning? A learning strategy, according to Weinstein and Mayer, as cited in Nielsen (1999), engages the learner's behaviours and thoughts during learning, with the intent of influencing the "learner's encoding process" (Nielsen, 1999, p. 276). Key to learning, according to this definition, is action, or engagement, by the learner. It is not sufficient for the learner to know, or to know about, practice strategies. Learners are engaged if they can show evidence that their practice influences the way they select, acquire, organize, or integrate new knowledge; and that it influences their "motivational or affective state" (p. 276). In this study, learning behaviour was

measured according to the different forms of action participants used as they learned their music. The teacher's explanation of practice strategies does not show how she instructs students to apply these two levels of engagement to their practice. This point implies grounds for further research on the issue of how piano teachers can better equip their students to engage themselves in their practice as they learn new music.

Smith (2001) argues that the sufficiency of content of higher-order thinking strategies in performance problems can be assessed based on whether they address the following tasks, defined in the literature review (Chapter 2 of this paper): problem identification, definition, analysis, diagnosis, alternative generation, and evaluation (Smith, 2001, p. 366-7).

Based on this set of criteria, it would appear that the content of teaching of practice strategies is not sufficient. The teacher has described some *elements* of music – note pitches, rhythm, articulation, dynamics, and tempo – that are written into musical scores, and of which students should take note during practice. The teacher has also identified some possible strategies – such as "repeating difficult passages hands separately and hands together," and "divide song into sections" – for use in overcoming the difficulties encountered. But learning to play a piece of music proficiently is a performance problem which, therefore, requires the learner to exercise and develop problem-based learning strategies. By merely informing students of elements evident in a piece of music, the teacher is not guiding students in when to use thinking tasks, or how to use them as learning strategies to solve performance problems. The teacher does offer students the possibility of using problem-solving strategies. She mentions repeating difficult sections of music hands separately or hands together, and segmenting music. Yet, according to Smith's (2001) standard for effective thinking, learners must have

identified, defined, analyzed, and diagnosed the problem; and sought alternative solutions to it, in order to implement one or more practice strategies effectively. In other words, learners must have shown that they have engaged a problem before the solution can be used meaningfully. The teacher has not explained how she helps students to discern when, how, or where to use solution strategies effectively. The task of alternative generation, in and of itself, requires creative thinking to work effectively, because it requires the learner to generate "candidate solutions" (Smith, 2001, p. 367). Each part of practice represents a unique performance problem and may, therefore, require a unique solution. The teacher has not explained how she helps participants address such problems in a systematic way. This finding suggests a need for further research into the pedagogical practices of the teacher to promote and develop problem-based teaching strategies.

Moore et al. (2003) cite research that shows that practice is often not done effectively. In her study, Hallam (2001) found that the instrumentalists she studied practiced simply by playing through their pieces start to finish a number of times, aiming merely "to play the music correctly" (p. 9). This habit was precisely the practice of all three of this study's participants, the purpose of which examiners questioned because it did not strike them as resembling practice. In their study of student musicians, Pitts et al. (2000) concluded that they knew what they were assigned to do, but "did not seem to have a real idea of why" (p. 53). Similar conclusions are warranted in this study, based on all three participants' claim that they were intent on "getting the notes and dynamics right," without being able to explain the broader context – style of playing, for example – within which these elements fit.

Performance-based problem solving in music can be assessed by observing the

extent to which performers listen to the way they are playing. In this sense, *discernment* and *listening* are synonymous. Performers will be able to, for example, diagnose the causes of problems in practice only if they are actively listening to the way they are playing. Moreover, knowledge of the performance standard that must be achieved is crucial to effective discernment. While the teacher indicated that she instructs students to compare their playing to that on a CD recording, there was no explanation of how the teacher instructs students to listen during practice. She has also not explained how she assesses these performance-based problem-solving skills. Incidentally, none of the participants was observed practicing using a CD recording of their music.

The teacher's explanation of how she teaches creativity reflects more of a personal view than a pedagogical one. "Sharing with the student my personal response to a song invites [students] to think of how the music speaks to them. Those thoughts are shared and affirmed." This statement, though indicative of the teacher's desire to relate to students on a personal level, leaves questions unanswered.

For creativity to occur effectively, critical thought is required. Creative thinking may qualify as an example of critical thinking, according to Smith's (2001) criteria, depending on how it is defined. In her questionnaire response, the teacher has not explained how "sharing" and "affirming" are actually taught, so it cannot be said for certain whether thinking really occurs during these activities. It is not clear that sharing and affirming actually "offer…real benefit to student thinking," or that students "acquire relevant knowledge through plausible instructional activities," because the teacher has not explained how she assesses this type of thinking (Smith, 2001, p. 357). Had evidence been shown that students were given opportunity to "draw on [their] capacity to imagine possibilities", it would be possible to affirm that instruction in creative thinking was

occurring. This gap in explanation is unfortunate because creative thinking in music can be assessed as a learning *process*, during week-to-week lessons and practice, just as much as it can be assessed as a *product*, by way of listening to performance. This finding suggests that further research into the pedagogical practices of the teacher is needed to determine how the creative thinking processes are taught and developed.

Creative thinking has been linked with the levels of flow, or optimal experience, as has been explained earlier, in research done by Byrne et al. (2003), and others. In music performance, flow can be assessed by measuring the degree of expression a musician demonstrates in performing a piece of music. In this study, such an assessment was made by the examiners, in their evaluations of participants' performances. The word "performance" is used here instead of "practice," because examiners rated practice in terms of performance proficiency.

Examiners used the words "stiff," "heavy," or "mechanical" to describe all three participants' performances. This evaluation indicates that performers were aiming toward a technically secure performance, but one that lacked expression. This view was the gist of the examiners' observations.

The following conclusions concerning creative thinking in music can be drawn. First, the product of creative thought, music performance, can indeed be assessed reliably, as shown by the consistency of examiners' assessments. Second, the examiners revealed by way of their comments that this habit can, in fact, be effectively taught, though evidence of such instruction was not apparent. For example, after making the assessment that, "The heavy touch limited the degree to which playing could sensitively convey colour, contrast, and the image of a wild rose having a beautiful perfume scent;" the examiners offered the following advice: "Adjust the height of the bench to the piano,

so that hand motion will occur more easily."

Implications

Participants' piano study yielded instant sound feedback on their learning behaviour. This feedback, combined with the other data collected, analyzed and interpreted, has provided valuable insight into two issues important to learning. The first is the act of practice or, more generally, the process by which students learn. The second is proficiency of performance, a reflection of the extent to which students reach the expected outcomes of learning. On both issues, this study provides important implications for classroom learning.

It was clear that participants knew of strategies that they could apply to their practice. It was clear, however, that they rarely used them. One lesson for teachers is, thus, to instruct and assess students on the use of learning strategies addressed in this study. The goal of this teaching should be to develop learners who "know a large number of strategies and understand when, where, and why these are important" (Nielsen, 1999, p. 289). Nielsen identifies specific, relational, and general metacognitive knowledge as the substance of teaching toward this goal (p. 289).

In their practice, participants were concerned primarily with the goal of being able to play through their pieces without mistakes. They were not aware of the level of proficiency required for them to know that they had mastered the music, so they were sometimes unaware of problems with their playing. The first goal of problem-based learning should, therefore, be for students to discover, through direct instruction from the teacher, what the goal of the learning should be.

In their concern for only the performance of their music, participants did not show an understanding of the practice process. To just "go through the motions" did not reveal

an ability to discern that a problem needed to be fixed. Nor did it reveal a discernment of the problem's causes. The lesson to be drawn from these insights is that teachers need to show students where certain practice strategies are appropriate to use. In particular situations where students make mistakes, teachers have the opportunity to show students how to remediate the problems with specific strategies. Equally important, teachers need to assess at a later time – at the next lesson or class – that students have actually used the strategy, in order to help them recognize improved understanding. For example, a teacher could instruct a piano student who does not show technical control of a section of music to practice that section hands separately for the next week's lesson, at a certain tempo. The student should expect to come to the next lesson prepared to meet the terms of that assignment, with significant improvement. The teacher, after listening to the student play the assigned section hands separately, could point out any remaining problems, if any, and the exercise could end with the teacher helping the student to realize the benefit achieved by devoting a week's worth of time to hands separate practice. This pattern should be a template for any problem-based learning in which students need help in effectively using a strategy to master a skill or concept. Nielsen (1999) calls this idea specific strategy knowledge, which "includes an understanding of a goal, the strategy's appropriate applications…and the learning gains thereby expected from consistent use of the strategy" (p. 289). Students' learning behaviour will become more effective as they are able to discern when problems arise, what the causes of the problems are, and how use of a problem-solving strategy will solve a problem.

Just as there were several practice strategies for the participants from which to select – hands separately, slower tempo, and segmentation to name a few – students could select from a variety of appropriate strategies to solve any learning-based problem. The

key is to know which strategy best addresses particular problems. Teachers, therefore, need to show students that certain strategies best address certain problems. For example, if a piano student needs to work on giving more shape to the melody in a certain part of a piece, the most appropriate strategy might be segmentation, likely at a slower-than-concert tempo, because it would enable the student to give deliberate attention to achieving the goal in just one section of the piece. Again, teachers should explain this reasoning to students, to engage them in taking ownership of strategy-based problem solving. Follow-up assessment would be necessary to ensure that students apply the strategies properly. Nielsen (1999) identifies this as relational strategy knowledge, which permits students to choose the appropriate strategy "given the changing demands of different tasks" (p. 289).

The result of teaching students to adopt and apply strategies to problem solving effectively should produce an awareness of success. Piano students who habitually practice new music by learning it hands separately first, until they are able to play each hand's part up to concert tempo; and then learn it hands together in segments, first at *tempo III*, and then gradually faster, only after achieving technical control of their playing – these students will certainly appreciate the effort required to apply these strategies. But they will be driven by the conviction that their effort will result in accomplishment, in the form of skillful performance. The same reasoning would result in the same achievement in any problem-based learning. This general awareness of strategy "reflects the student's understanding that effort is required to apply strategies, and that effort often produces success" (Nielsen, 1999, p. 289). Indeed, students' opportunity to develop this knowledge in piano practice could serve as a model for them to follow in other subject-based learning.

Factors that contribute to skilled piano performance, therefore, have great potential in helping students to meet school-based learning expectations. "Just as some [musical] training increases the number of [brain] cells that respond to a sound when it becomes important, prolonged learning produces more marked responses and physical changes in the brain" (Weinberger, 2004, p. 90). Clearly then, even though current understanding of the brain's treatment of new information, musical or otherwise, is limited, piano students stand to benefit a great deal in their scholastic learning, depending on their learning behaviour while practicing piano. By planning and monitoring their practice, and by exercising awareness of the musical structures they encounter, piano students develop strategies for learning that may be equally effective in classroom learning.

Teachers need to withstand the urge to teach toward learning expectations, for the sake of teaching formative learning strategies. Even though this is a rather unappealing alternative because of the labour required to guide students towards constructive learning behaviour, the long-term benefits will be well worth the cost. Curricular expectations should be revised to place much greater emphasis on integration of these formative learning behaviours. Teachers need to be instructed on how to effectively guide students in learning these processes.

If students are provided with the support they need to be able to meet the demands of challenging performance expectations, they will be free to recognize and develop their strengths. If they are taught how to achieve solutions to significant problems successfully, they will become more confident as learners, and they will be respected as unique individuals. These measures will cultivate purpose-driven learners, students who are willing and prepared to submit sizable effort to a cause they know will yield them

rewards. It is imperative that educators keep this cause in mind. Students will recognize the care that motivates their teachers' labours and will, therefore, be encouraged to respond wholeheartedly.

A number of questions remain for further research. A discrepancy became evident between the knowledge participants had of practice strategies, and the lack of evidence of those strategies in their actual practice. This study did not, however, focus on the extent of this discrepancy. Nevertheless, what caused this discrepancy? Was it due to a shortfall in teaching methodology, or to skills on which participants had received instruction, but which they were not applying?

A skill important for effective performance is the ability to make decisions "in flight." In the practice of music, this skill requires performers to listen self-critically to their playing, and to monitor the quality of their playing relative to standards performers have in mind. Participants in this study were in the habit of simply playing through their pieces; in so doing, they were not exercising self-critical listening skills required for effective monitoring. Was this habit a result of teaching methodology? If so, on what grounds did the teaching methodology fall short? And if so, what aspects of the teaching methodology could be changed to improve participant's practice?

Creative expression is an important element in proficient musical performance, yet it was one that was consistently lacking in the playing of this study's participants. This discrepancy raises questions: Was the teacher's strategy the reason for the mechanical style of playing? Even though research indicates that expressive performance can be taught, this study did not address the question of how this teaching could be accomplished.

This study has investigated factors affecting the performance proficiency of three

intermediate piano students of different learning styles. Factors considered were practice behaviour, attitude, and motivation demonstrated by participants, as well as ownership of learning. Teaching methodology was examined, as were extrinsic factors, such as parental influence, school- and employment-related responsibilities, for their effects on performance proficiency. This study has revealed that participants planned practice time, but they merely played through their music, instead of following a strategy as a part of their practice. Self-critical monitoring of learning did not occur according to the standards of musicianship described earlier. Teaching methodology was one of the very likely causes of this weakness in practice behaviour. The performance of all participants was quite mechanical in style, lacking in creative expression. Teaching methodology was again a likely reason for this shortcoming. By contrast, all participants displayed positive attitude, were motivated to learn, and two of the participants were able to explain how they sought to transfer the knowledge and skills acquired in music to other areas of their lives. Participants identified the influence of their teacher as a positive factor in the development of these attributes. Teaching influence was likely also influential in helping participants plan their practice time.

All participants identified parental support as a significant positive influence on their piano practice, and on their management of responsibilities at school and part-time work. There was evidence that the learning style participants used in their practice was that which they carried into other schoolwork. Given the consistency of performance-related findings among all participants, however, learning style was not deemed a factor affecting performance proficiency.

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APPENDIX A

Participant Interview Questions

1. Describe the location and time of day of your practice.
2. Are you supervised, and are there distractions, as you practice?
3. Who is responsible for you taking piano lessons?
4. Was this activity important to you? Why or why not?
5. How well were you concentrating while you were practicing?
6. What do you think about when you practice?
7. How do you make practice time fun?
8. How do you deal with difficulties you encounter as you practice?
9. Describe your practice environment.
10. What motivates you to practice?
11. What influence do(es) your parent(s) have on your practice?
12. Are there influences besides your parent(s) that determine the amount or quality of your practice?
13. What goals do you have in taking lessons?
14. Are you involved in any before-school or after-school activities? If so, how much time do you spend at them per week?
15. Do you have a part-time job or other responsibilities aside from school during the school year, and if so, how much time do you devote to them per week?
16. How do your study habits during piano practice compare to your study habits as you do homework for school?
17. Do you choose the time, place, and environment of your study, or do your parents?

APPENDIX B

Teacher Methodology Questionnaire Form

Please write answers to the following questions as completely and with as much detail as you can. Your answers will serve to help in understanding students' practice strategies.

1. At the grade 5 or 6 level, what resources do you commonly use?

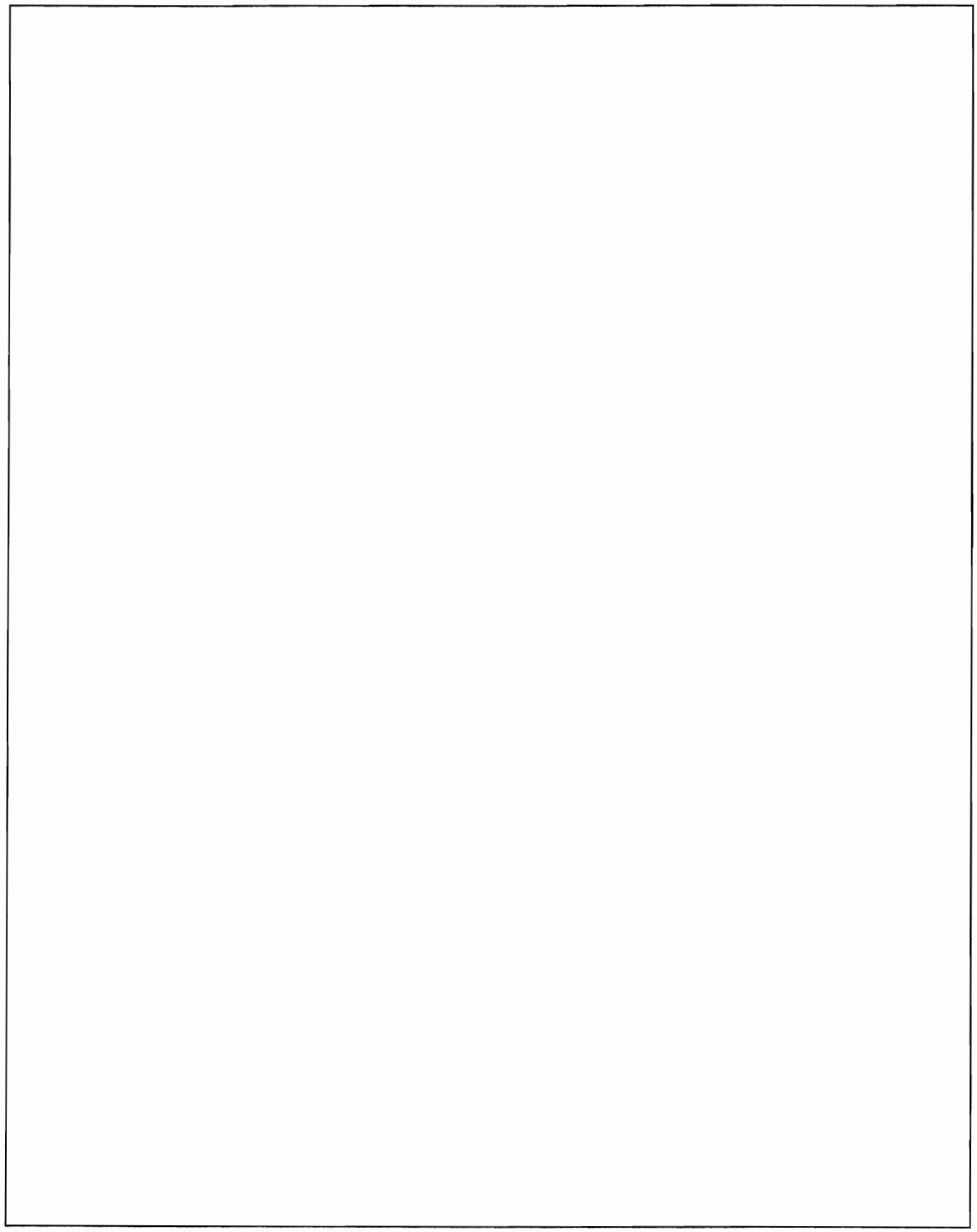
2. What are your reasons for using those resources?

3. Describe the way you plan a typical lesson.

4. Do you address long-term objectives of lessons with students, and if so, how?

5. What strategies do you teach students to use as they practise?

6. How do you nurture student creativity?



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DATE: **March 31, 2005**

FROM: Linda Rose-Krasnor, Chair
Research Ethics Board (REB)

TO: Joe Engemann, Education
Will LAMMERS

FILE: **04-278 - LAMMERS**

TITLE: **Learning Strategies of Intermediate Piano Students**

The Brock University Research Ethics Board has reviewed the above research proposal.

DECISION: **Accepted as Clarified**

This project has received ethics clearance for the period of **March 31, 2005** to **April 30, 2005** subject to full REB ratification at the Research Ethics Board's next scheduled meeting. The clearance may be extended upon request. ***The study may now proceed.***

Please note that the Research Ethics Board (REB) requires that you adhere to the protocol as last reviewed and approved by the REB. During the course of research no deviations from, or changes to, the protocol, recruitment, or consent form may be initiated without prior written approval from the REB. The Board must approve any modifications before they can be implemented. If you wish to modify your research project, please refer to http://www.brocku.ca/researchservices/forms to complete the appropriate form **Revision or Modification to an Ongoing Application.**

Adverse or unexpected events must be reported to the REB as soon as possible with an indication of how these events affect, in the view of the Principal Investigator, the safety of the participants and the continuation of the protocol.

If research participants are in the care of a health facility, at a school, or other institution or community organization, it is the responsibility of the Principal Investigator to ensure that the ethical guidelines and approvals of those facilities or institutions are obtained and filed with the REB prior to the initiation of any research protocols.

The Tri-Council. Policy Statement requires that ongoing research be monitored. A Final Report is required for all projects, with the exception of undergraduate projects, upon completion of the project. Researchers with projects lasting more than one year are required to submit a Continuing Review Report annually. The Office of Research Services will contact you when this form ***Continuing Review/Final Report*** is required.

Please quote your REB file number on all future correspondence.